

DOCUMENT RESUME

ED 171 555

SE 027 737

TITLE Metrics: The Future is Now!
 INSTITUTION Community School District 18, Brooklyn, N.Y.
 SPONS AGENCY New York State Education Dept., Albany.; Office of
 Education (DHEW), Washington, D.C.
 PUB DATE 79
 NOTE 153p.; Contains light and broken type
 EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
 DESCRIPTORS *Activity Units; *Instructional Materials; Junior
 High Schools; *Mathematics Education; *Mathematics
 Materials; Measurement; *Metric System; Secondary
 Education; Secondary School Mathematics

ABSTRACT

Presented are junior high school curriculum materials for teaching the metric system. Included are behavioral objectives, pre- and post-tests, introductory and historical material, and units on linear measurement, geometry, weight, capacity, and temperature. Each unit contains many student activities such as puzzles, fill in the blanks problems, and measurement of household objects. (BB)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

ED171555

RETURNS

The

Future is NOW!

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Milton Anger

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

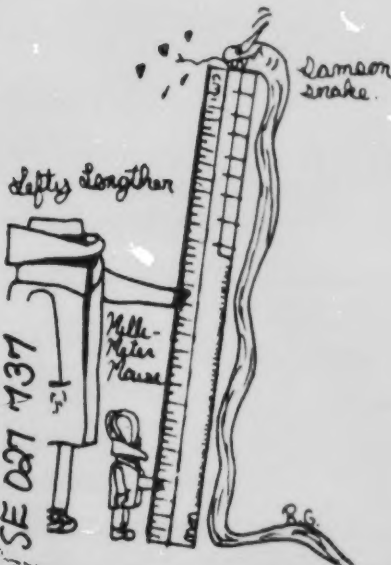
*Larry
Liter*

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."



*Tommy
temperature.*

Office of the Community
Superintendent
Community School District 18
755 East 100 Street
Brooklyn, N. Y. 11236
257-7500



DISTRICT
18
BROOKLYN, N.Y.

COMMUNITY SCHOOL DISTRICT # 18
BROOKLYN, NEW YORK

SYSTEME
INTERNATIONAL

PROJECT T.I.M.E. - ESEA TITLE IV C
JUNIOR HIGH SCHOOL LEVEL METRIC PROGRAM.

HOWARD M. GOLDSTEIN
PROJECT COORDINATOR

METRIC
COORDINATORS

SEYMOUR BASHKOWITZ
GARY HERT
ELLIOTT KORB
RICHARD LEVY
ARNOLD MARCUS

PROJECT T.I.M.E. (TIMELY IMPLEMENTATION OF METRIC EDUCATION)
A COMPONENT OF THE I.S.S. EDUCATIONAL SYSTEM.

Since 1976, Community School District # 18 has been at the forefront in the development and implementation of new methods and materials in secondary school metric education.

Through a carefully managed program, Project T.I.M.E. the District has pursued its four major objectives (i.e., curriculum development, staff training, dissemination and demonstration), and has started to bring about a substantial and significant achievement of the project's objectives.

Since the inception of the program, instructional modules, activities and supportive materials were developed and disseminated for introducing metric concepts to students. Staff training workshops are being conducted with teaching personnel, I.S.S. Resource Persons and Title I remedial mathematics teachers (these workshops are structured with locally developed training materials). The District's metric newsletter (Metric News Hotline) is widely used, and an adult level "metrication Center" has been established and is operational.

As a result of this project:

- . District # 18 junior high school teachers are demonstrating significantly increased motivation to teach the metric system.
- . The District's junior high school teachers have significantly enhanced their qualifications to teach the metric system; and
- . Our junior high school students are showing significant improvement in their knowledge of metric measurement.

Finally, successful implementation of Project T.I.M.E. exemplifies once again, the versatility of the district's Instructional Support System (I.S.S.)

NEW YORK CITY BOARD OF EDUCATION
COMMUNITY SCHOOL DISTRICT #18
BROOKLYN, NEW YORK 11236



Office of the Community
Superintendent
Community School District 18
755 East 100 Street
Brooklyn, N. Y. 11236
257-7500

JUNIOR HIGH SCHOOL METRIC EDUCATION PROGRAM

HARVEY GARNER
COMMUNITY SUPERINTENDENT

JACK ZIMMER
PRESIDENT, COMMUNITY
SCHOOL BOARD #18

PROJECT PARTICIPANTS

J 68 ELLIOT KORB
J 211 SEYMOUR BASHKOWITZ
J 232 GARY HERT

J 252 ARNOLD MARCUS
J 285 RICHARD LEVY

HOWARD M. GOLDSTEIN
PROJECT COORDINATOR

RALPH GRANATA
STUDENT ARTIST

ELLEN VADER
ELAINE FRANK

(TECHNICAL TYPISTS)

FUNDING SOURCES

N.Y.S.E.D. TITLE 4 C

PROJ. # 42 - C77 - 13134-2-DEV.

DHEW/OFFICE OF EDUCATION PROG. # 13-561

INTRODUCTION TO METRICS

HISTORY

On August 18, 1972, the United States Senate passed the Metric Conversion Act requiring the federal government to convert to a metric system within 10 years. This historic event set in motion formal efforts to convert the last nonmetric major nation (USA) of the world to a metric system of measures.

The notion of metrics in the U.S.A. has been around for a long time. In 1790 Thomas Jefferson as Secretary of State, was requested to prepare a plan for a unified system of weights and measures. No laws were passed as a result of this work. Jefferson's plan involved three important principals:

- 1) The standard unit of length should be based on some unchanging, absolute standard found in the physical universe.
- 2) That length, volume, and weight should be directly related to each other.
- 3) The specifically named multiples and subdivisions of the standard units should be decimally related.

At the same time that Jefferson was preparing his plan, the French Academy began to work on the new system and proposed, first of all, a fully decimal based system. Shortly thereafter they specified that the unit of length should be equal to one ten-millionth of an arc representing the distance between the North Pole and the equator. This standard unit of length was to be called the metre. The word "metre" was chosen from the Greek word metron which means measure.



The Metric System was popularized by Napoleon Bonaparte during his sweep across Western Europe. He observed that even the simplest of people could use this simplified system of weights and measures.

As a new region of Europe was conquered, Napoleon required that everyone use the Metric System. After Waterloo, the Metric System was retained because everyone preferred it to anything else.

Since Great Britain was not conquered, it maintained the old standard units of measure as did its ally, the USA. When European nations expanded their influence in other hemispheres, the Metric System was imposed. That is why so many countries in the world are now on the metric system.

The world movement toward full use of the metric system of weights and measures was so universal that the United States remained as the only major country using the British imperial system of weights and measures. In fact, England, the nation that established the imperial system, is completing a 10 year program of metric implementation.

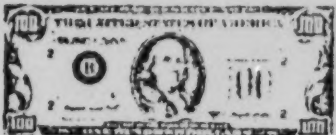
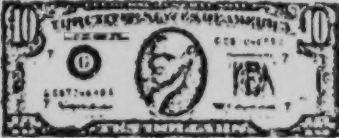
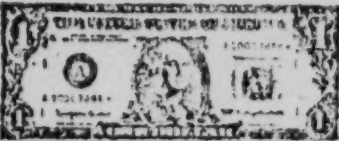
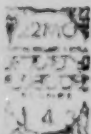
WHAT IS METRICS

The metric system simply and logically coordinates the measurements of length, area, volume and mass into one decimalized system. Additions and other numerical operations are simple. Except for moving the decimal marker, the metric system requires no conversion from unit to unit as does the U.S. customary system. For example, between inches and feet or ounces and pounds.

The metric system is structured on multiples of 10 to simplify measurement as well as conversion. These attributes of the metric system lead in turn to simplifying the learning of the concepts and processes related to measurement.

As indicated earlier, the meter (basic unit of length) was decided to be $\frac{1}{10}$ the distance from the equator to the North Pole. The gram (basic unit of weight (or mass)) was determined to be the weight of 1 cubic centimeter of water at 4° celsius. The liter (basic unit of capacity) was determined to be the amount of liquid that could fill a cube which is 10 cm on each side. All the other metric units stem from the 3 basic units of measure and are related by the decimal system. Our monetary system works on the same principles as the Metric System. To further illustrate the comparison examine the chart on the next page.

METRIC COMPARISONS

PLACE VALUE	MONEY	LENGTH (METER)	CAPACITY (LITER)	WEIGHT (GRAM)
1000		kilometer km	kiloliter kl	kilogram kg
100		hectometer hm	hectoliter hl	hectogram hg
10		dekameter dam	dekaliter dal	dekagram dag
1		meter m	liter l	gram g
0.1		decimeter dm	deciliter dl	decigram dg
0.01		centimeter cm	centiliter cl	centigram cg
0.001		millimeter mm	milliliter ml	milligram mg

COMMUNITY SCHOOL DISTRICT # 18

PROJECT T.I.M.E. - JHS

METRIC MEASUREMENT PRE-TEST

METRIC MEASUREMENT POST-TEST

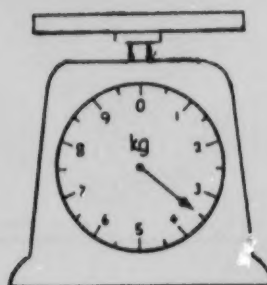
Directions:

Mark your answers on the answer sheet. Fill in the space corresponding to the answer you have chosen.

1. The basic metric unit of length is a:
 - A. gram
 - B. meter
 - C. quart
 - D. liter
2. The basic metric system unit of weight is a:
 - A. pound
 - B. liter
 - C. gram
 - D. meter
3. The basic metric system unit of liquid capacity is a:
 - A. pound
 - B. gram
 - C. decagram
 - D. liter
4. Which one of the following is not used in the metric system?
 - A. meter
 - B. yard
 - C. thermometer
 - D. decimeter
5. The short way of writing millimeter is:
 - A. mm
 - B. cm
 - C. ml
 - D. km
6. The short way of writing decimeter is:
 - A. cm
 - B. hm
 - C. dm
 - D. km

7. What weight is shown on the scale in the picture?

A. 3.5 kilograms
B. 35.0 grams
C. 3.5 decagrams
D. 3.5 milligrams



8. How many grams are there in a kilogram?

A. 10
B. 100
C. 1,000
D. 10,000

9. How many grams are there in a decagram?

A. 1
B. 10
C. 100
D. 1,000

10. How many meters are there in a half a kilometer?

A. 50
B. 100
C. 500
D. 1,000

11. A liter is equivalent to how many cubic centimeters?

A. 1
B. 10
C. 100
D. 1,000

12. One cubic centimeter of water weighs approximately:

A. 1 milligram
B. 1 gram
C. 1 decagram
D. 1 kilogram

13. One liter of water weighs approximately:

A. 1 gram
B. 10 grams
C. 100 grams
D. 1,000 grams

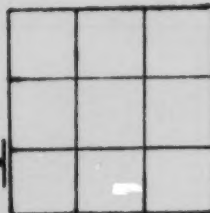
14. If a box has a volume of 3,000 cubic centimeters, how much water will it hold?

A. 3 grams
B. 3 kilograms
C. 30 kilograms
D. 300 kilograms

15. If a box has a volume of 3,000 cubic centimeters, and it is full of water, what is the weight of the water?

A. 3 grams
B. 3 kilograms
C. 30 kilograms
D. 300 kilograms

The next two questions are based on this figure



16. What is the area of the figure?

A. 9 mm
B. 9 cm
C. 9 cm³
D. 9 cm²

17. What is the perimeter of the above figure?

A. 12 millimeters
B. 12 centimeters
C. 1.2 centimeters
D. 1.2 meters

18. How many centimeters are there in 6 meters?

A. 6
B. 60
C. 600
D. 6,000

19. How many meters are there in 700 centimeters?

A. 0.7
B. 7.0
C. 70.0
D. 700.0

20. How many milliliters are there in two liters?

A. 2
B. 20
C. 200
D. 2,000

21. How many grams are there in 30 kilograms?

A. 0.3
B. 30
C. 3,000
D. 30,000

22. On the Celsius scale, the freezing point of water (at sea level) is:
- A. -100°C
 - B. 0°C
 - C. 100°C
 - D. 200°C
23. On the Celsius scale, the boiling point of water (at sea level) is:
- A. 0°C
 - B. 30°C
 - C. 100°C
 - D. 200°C
24. Which one of the following is the largest volume?
- A. 2 kilometers
 - B. 2 hectoliters
 - C. 2 centiliters
 - D. 2 milliliters
25. Which one of the following is the smallest weight (or smallest mass)?
- A. 4 hectograms
 - B. 4 kilograms
 - C. 4 centigrams
 - D. 4 milligrams

WHY METRICS

In addition to the ease with which metric units can be converted within its system, there are other pressing reasons for its need in America.

The cost and inconvenience of a change to the metric system will be substantial even if it is done carefully by plan, but the cost of not converting in a timely manner could be far greater.

Going metric allows us the opportunity at least in measurement to speak one language world-wide. Scientists, engineers, businessmen, educators and government officials will communicate with one another more freely and with less risk of misunderstanding.

Metric conversion will provide manufacturers the opportunity to examine their whole line of products to see if it can be simplified.

The simplicity of the metric system will lead to greater efficiency in the education system. The time saved in learning a large number of illogical weights and measures can be used more profitably in other ways.

The sole use of the metric system will not only facilitate the teaching of mathematics but will have an impact on other fields such as geography, biology, psychology and home economics. Translating textbooks into metric terms will provide opportunities for curriculum improvement.

S.I. UNITS

Sometimes the metric system is referred to as S.I. (meaning International System of Units). The symbol S.I. is from the French translation, Systeme International d Unites. Our curriculum manual is different from the S.I. System in the following respect.

1. The word "metre" is the French spelling, "Meter" is preferred in this manual.
2. Dekameter is abbreviated as dkm or dam, this manual used dam.
3. The use of the word "weight" and "mass" are interchangeable in this manual and "weight" is preferred.

CONCLUSION

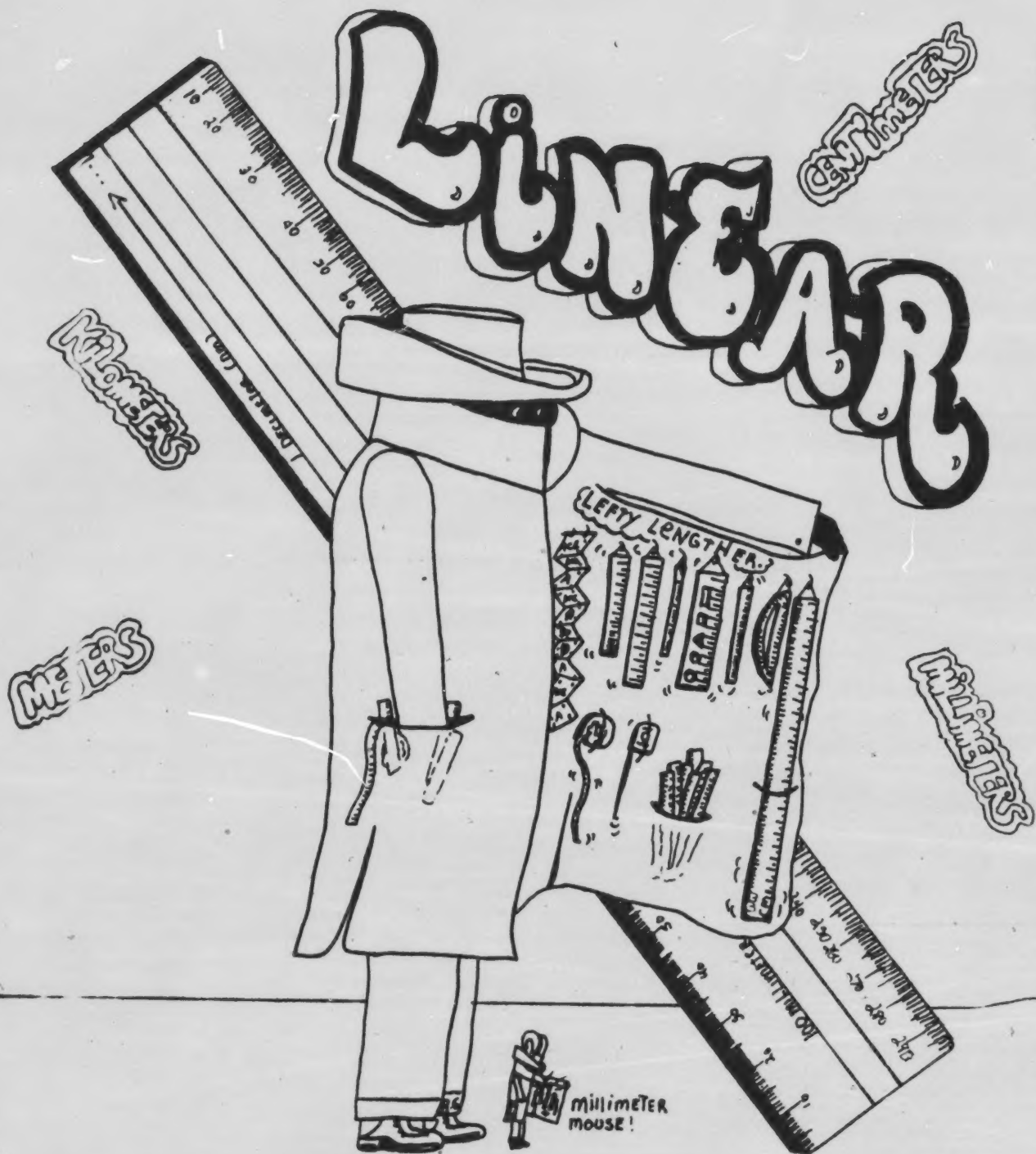
Whether or not for the United States to convert to national use of the International System of Units is not a critical issue any longer. The question is not "whether" but, rather, "when" and "how" full conversion will be completed.

The greatest difficulties will be in changing the thinking of people who use a customary system of measures embedded in a thousand years of Anglo-Saxon culture. This system has become an integral part of the general behavior of all United States citizens. Now a new language of measurement is being imposed on them; people will be asked not only to translate from one language to another, but to actually become bilingual in measurement and within a few years to think entirely in the new language with no further dependence on the comfortable and once familiar imperial system.

In considering the process of conversion to the International System of Units, it may be advisable to point out that a gradual conversion might work to hinder the needed change of mind essential to complete application. It is not enough merely to translate between systems, one must be forced to think in the metric system.

The suggested sequence of the metric curriculum is the following:

Linear
Geometry
Weight
Capacity
Temperature



THE STUDENT WILL BE ABLE TO:

- L-1 IDENTIFY THE METER AS THE BASE UNIT FOR MEASURING LENGTH.
- L-2 RECOGNIZE LENGTHS IN TERMS OF THE METER.
- L-3 ESTIMATE LENGTHS IN TERMS OF THE METER.
- L-4 MEASURE LENGTHS IN TERMS OF THE METER.
- L-5 EXPRESS THE RELATIONSHIP BETWEEN METERS AND DECIMETERS.
- L-6 RECOGNIZE LENGTHS IN TERMS OF THE DECIMETER.
- L-7 MEASURE LENGTHS IN TERMS OF THE DECIMETER.
- L-8 COMPARE LENGTHS IN METERS TO DECIMETERS.
- L-9 COMPARE LENGTHS IN DECIMETERS TO METERS.
- L-10 CONVERT METERS TO DECIMETERS.
- L-11 CONVERT DECIMETERS TO METERS.
- L-12 EXPRESS THE RELATIONSHIP BETWEEN THE METER AND THE CENTIMETER.
- L-13 RECOGNIZE LENGTHS IN TERMS OF THE CENTIMETER.
- L-14 ESTIMATE LENGTHS IN TERMS OF THE CENTIMETER.
- L-15 MEASURE LENGTHS IN TERMS OF THE CENTIMETER.
- L-16 CONVERT LENGTHS IN METERS TO CENTIMETERS.
- L-17 CONVERT LENGTHS IN CENTIMETERS TO METERS.
- L-18 COMPARE LENGTH IN METERS, DECIMETERS AND CENTIMETERS.
- L-19 USE METRIC SCALE DRAWINGS TO FIND ACTUAL DIMENSIONS.
- L-20 EXPRESS THE RELATIONSHIP BETWEEN THE METER AND THE MILLIMETER.
- L-21 RECOGNIZE LENGTHS IN TERMS OF THE MILLIMETER.
- L-22 MEASURE LENGTHS IN TERMS OF THE MILLIMETER.
- L-23 CONVERT MILLIMETERS TO CENTIMETERS.
- L-24 CONVERT CENTIMETERS TO MILLIMETERS.
- L-25 CONVERT WITHIN METERS, CENTIMETERS AND MILLIMETERS.

PROJECT T.I.M.E. - NONGRADED J.H.S. LEVEL METRIC INSTRUCTIONAL OBJECTIVES.
(LINEAR)

- L-26 WORKING WITH THE DEKAMETER AND HECTOMETER AS METRIC UNITS OF LENGTH.
- L-27 RECOGNIZE THE KILOMETER AS A UNIT OF METRIC MEASURE.
- L-28 ESTIMATE DISTANCE IN TERMS OF THE KILOMETER.
- L-29 USE SCALE DRAWINGS TO DETERMINE APPROXIMATE LENGTHS IN KILOMETERS.
- L-30 CONVERT BETWEEN THE VARIOUS STANDARD UNITS OF METRIC LENGTH.
- L-31 READ AND INTERPRET METRIC UNITS OF LENGTH EXPRESSED IN DECIMAL FORM.
- L-32 PERFORM OPERATIONS WITH LIKE UNITS OF METRIC LENGTH.
- L-33 PERFORM OPERATIONS WITH UNLIKE UNITS OF METRIC LENGTH.
- L-34 EXPRESS RESULTS OF OPERATIONS IN GREATEST METRIC UNITS.
- L-35 SOLVE VERBAL PROBLEMS EXPRESSED IN METRIC LINEAR UNITS.
- L-36 UNDERSTAND LENGTH IN THE METRIC SYSTEM.

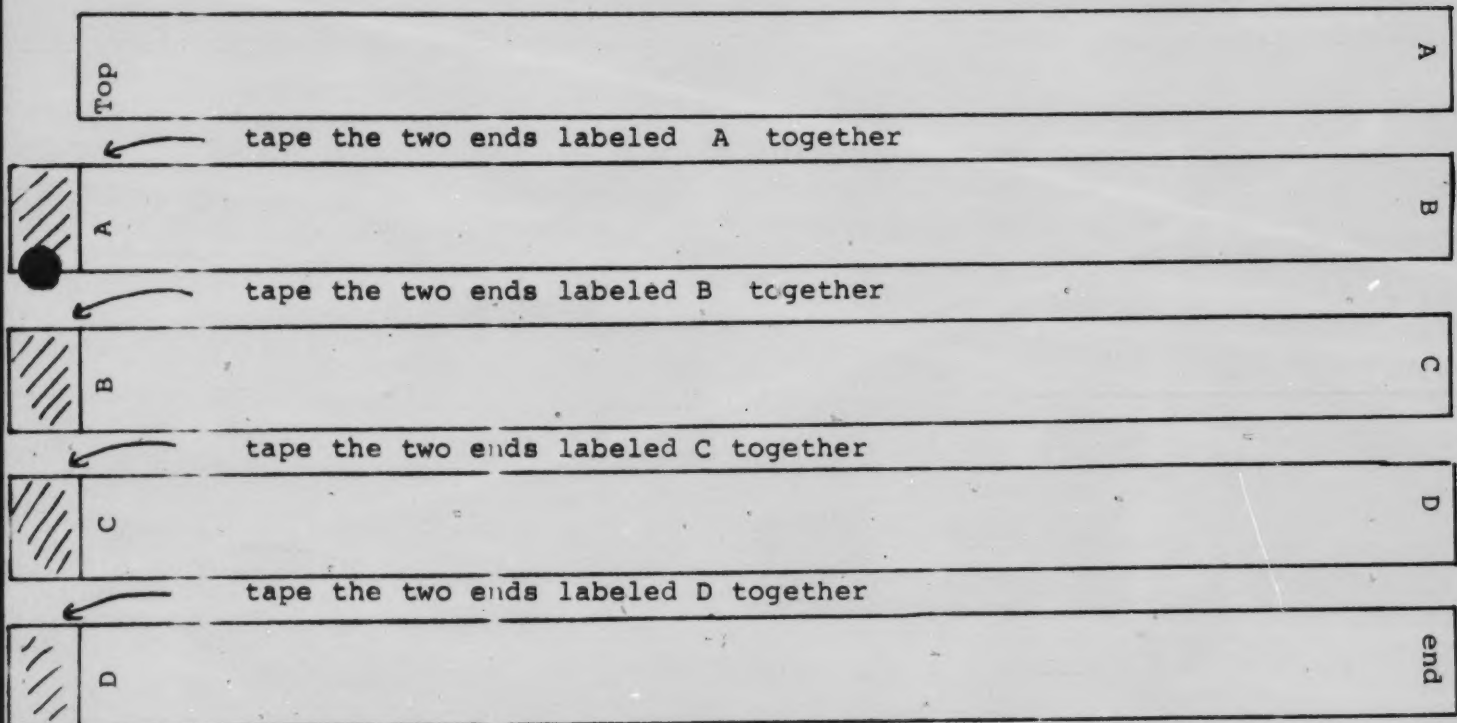
I. O. # 1. - 1 Identify the meter as the base unit for measuring length.

THE FIRST METRIC UNIT YOU WILL WORK WITH IS THE METER. IT IS USED FOR MEASURING LENGTH.

THE ACTIVITY BELOW WILL DIRECT YOU TO MAKE YOUR OWN METER MEASURE. AFTER COMPLETING THIS ACTIVITY COMPARE THE LENGTH OF YOUR METER TO THE METER STICK THAT YOUR TEACHER WILL SHOW YOU.

DIRECTIONS:

1. CUT OUT THE FIVE STRIPS.
2. TAPE THEM TOGETHER TO MAKE A METER.
3. SAVE THE METER. DO NOT DESTROY.

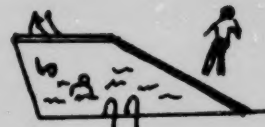
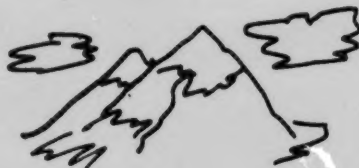


Note to student

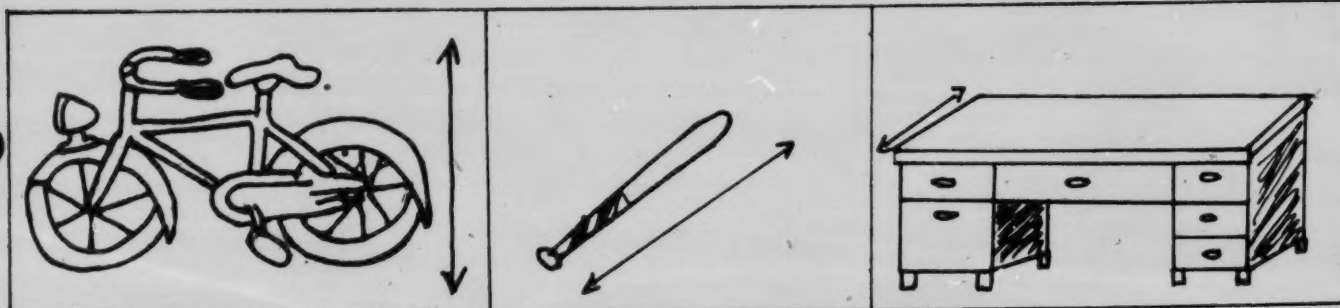
The same objective can be accomplished by using string. Ask your teacher for directions.

THE METER IS A STANDARD UNIT FOR MEASURING LENGTH OR DISTANCE. WE USE THE METER TO FIND OUT HOW LONG, HOW WIDE, OR HOW HIGH SOMETHING IS. THE SYMBOL FOR METER IS m.

WE CAN USE THE METER TO MEASURE THINGS LIKE

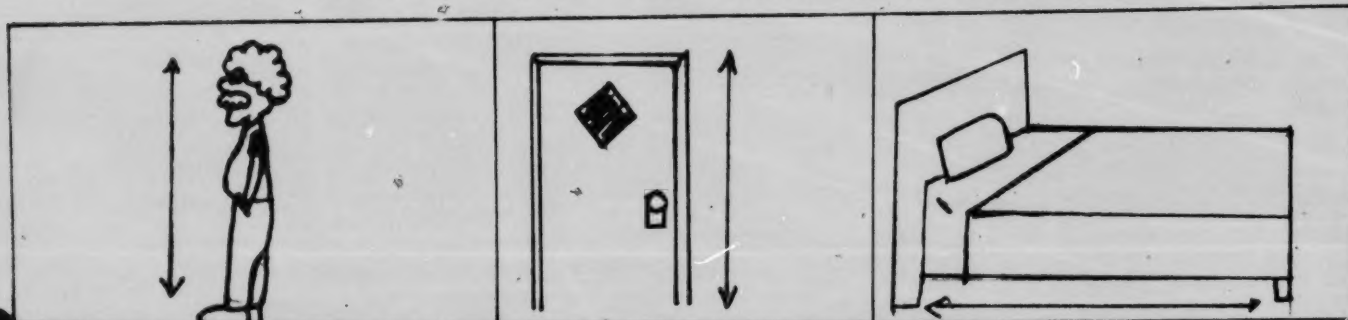


THE OBJECTS PICTURED BELOW MEASURE ABOUT ONE METER.



1. NAME THREE OTHER OBJECTS THAT MEASURE ABOUT ONE METER.

THE OBJECTS PICTURED BELOW MEASURE ABOUT TWO METERS.



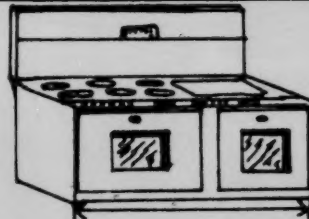
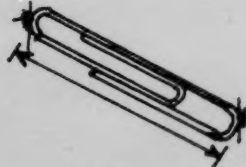
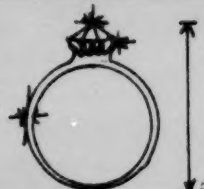
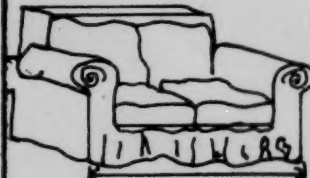
2. NAME THREE OTHER OBJECTS THAT MEASURE ABOUT TWO METERS.

- A. EACH PICTURE HAS AN ARROW SHOWING A LENGTH OR DISTANCE. TELL WHETHER YOU THINK EACH OBJECT IN REAL LIFE, IS:

MUCH LESS THAN 1 m,

ABOUT 1 m, OR

MUCH MORE THAN 1 m.

 1. _____	 2. _____	 3. _____
 4. _____	 5. _____	 6. _____
 7. _____	 8. _____	 9. _____

- B. CIRCLE EACH OBJECT NAMED BELOW THAT YOU THINK IS SHORTER THAN 1 METER. DO NOT MEASURE THESE OBJECTS TO FIND YOUR ANSWERS.

- | | | | |
|---------|------------|-------------------|---------------|
| 1. CAR | 3. MY ARM | 5. BED | 7. MY TEACHER |
| 2. BOOK | 4. MY SHOE | 6. MY BEST FRIEND | 8. TV SET |

- C. PUT A ✓ BY EACH OBJECT NAMED BELOW THAT WOULD MEASURE ABOUT 1 METER.

- | | |
|---------------------------------|---------------------|
| ___ 1. HEIGHT OF CLASSROOM DOOR | ___ 4. BASEBALL BAT |
| ___ 2. HEIGHT OF TEACHER'S DESK | ___ 5. A MAN'S BELT |
| ___ 3. MY LEG | ___ 6. HAMMER |

I.O. # L-3 ESTIMATE LENGTHS IN TERMS OF THE METER

COMPLETE THE TABLE BELOW BY PLACING A CHECK IN THE APPROPRIATE COLUMN.

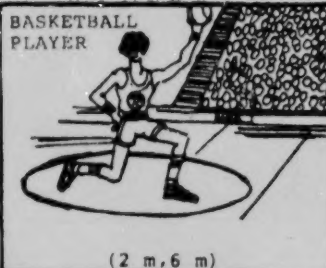
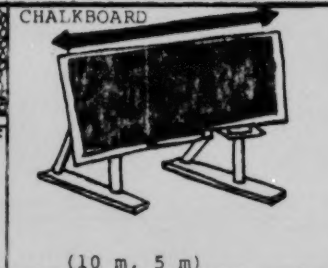
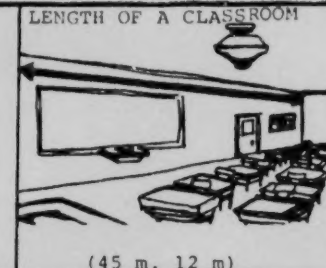
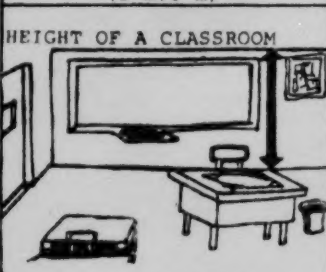
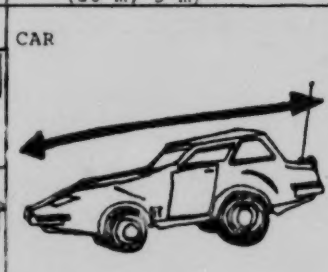
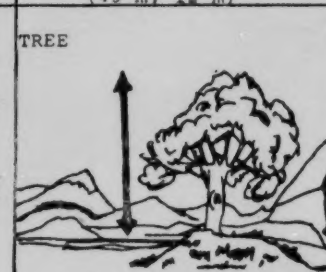
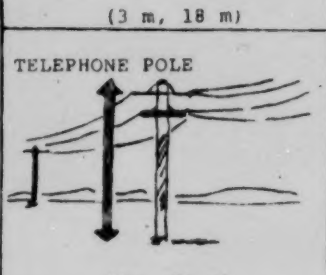
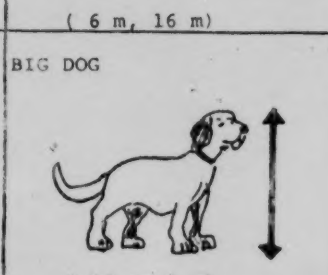
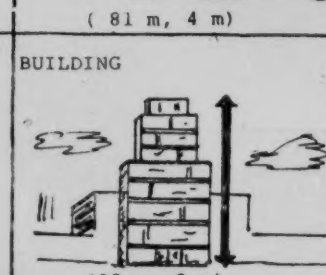
OBJECT	ABOUT THE SAME LENGTH AS A METER	LONGER THAN A METER.	SHORTER THAN A METER.
1. HEIGHT OF A HOUSE DOOR			
2. BASEBALL BAT			
3. CAR			
4. WIDTH OF A DOOR			
5. YOUR TEACHER			
6. LENGTH OF A DESK			
7. YOUR SHOE			
8. WIDTH OF A RING			

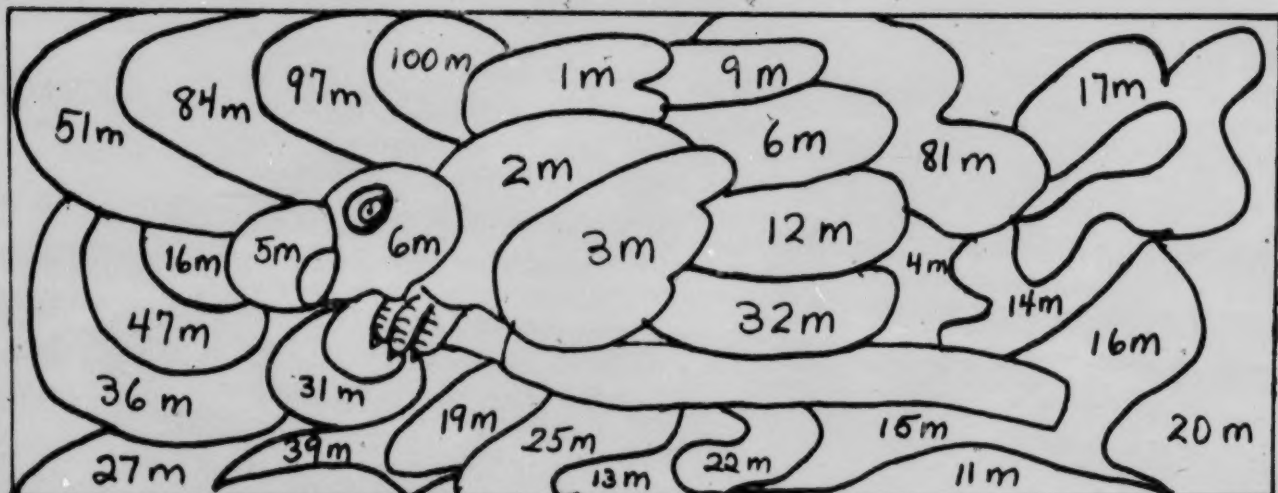
USE CHART BELOW AS A GUIDE FOR ESTIMATING LENGTH OF DIAGRAMS THAT APPEAR ON THE FOLLOWING PAGE:

METERS	
100	LENGTH OF AN OLYMPIC RACE
90	LENGTH OF A FOOTBALL FIELD
80	LENGTH OF A SHORT CITY BLOCK
70	A SIX CAR TRAIN
60	A RECORD FIELD GOAL
50	LENGTH OF A HOCKEY RINK
40	HOME PLATE TO SECOND BASE
30	HEIGHT OF AN EIGHT STORY BUILDING
20	LENGTH OF A BOWLING ALLEY
10	TELEPHONE POLE



DIRECTIONS:

- | | | |
|---|---|--|
| <p>BASKETBALL PLAYER</p>  <p>(2 m, 6 m)</p> | <p>CHALKBOARD</p>  <p>(10 m, 5 m)</p> | <p>LENGTH OF A CLASSROOM</p>  <p>(45 m, 12 m)</p> |
| <p>HEIGHT OF A CLASSROOM</p>  <p>(3 m, 18 m)</p> | <p>CAR</p>  <p>(6 m, 16 m)</p> | <p>TREE</p>  <p>(81 m, 4 m)</p> |
| <p>TELEPHONE POLE</p>  <p>(9 m, 30 m)</p> | <p>BIG DOG</p>  <p>(14 m, 1 m)</p> | <p>BUILDING</p>  <p>(32 m, 8 m)</p> |



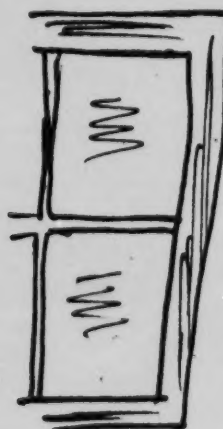
I.O. # L - 4 MEASURE LENGTHS IN TERMS OF THE METER.

- A. USE YOUR METER MEASURE TO MEASURE THINGS IN YOUR CLASSROOM OR HOME. MAKE A LIST OF WHAT YOU MEASURE. REMEMBER, m IS AN ABBREVIATION FOR METER.

	SHORTER THAN 1 m	APPROXIMATELY 1 m	LONGER THAN 1 m
1.			
2.			
3.			
4.			
5.			

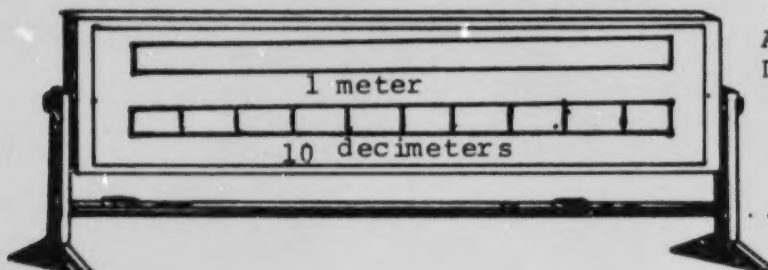
- B. MEASURE TO THE NEAREST METER.

- YOUR HEIGHT: _____ METERS.
- LENGTH OF CLASSROOM: _____ METERS.
- WIDTH OF CLASSROOM: _____ METERS.
- HEIGHT OF CHALKBOARD: _____ METERS.
- LENGTH OF TEACHER'S DESK: _____ METERS.
- LENGTH OF WINDOW POLE: _____ METERS.



- I. O. L - 5 EXPRESS THE RELATIONSHIP BETWEEN METERS AND DECIMETERS.
I. O. L - 6 RECOGNIZE LENGTHS IN TERMS OF THE DECIMETER.

THERE ARE 10 DECIMETERS IN 1 METER.

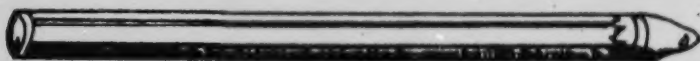


ABBREVIATION FOR
DECIMETER IS dm.

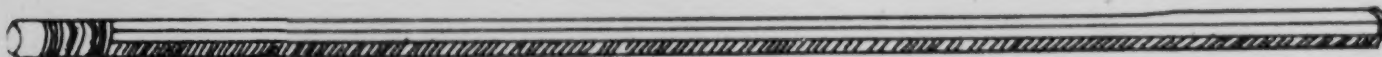
FILL IN THE BLANKS.

- | | |
|---------------------------------|---------------------|
| 1.) 1 DECIMETER (dm) = .1 METER | 6.) _____ dm = .6 m |
| 2.) 2 dm = .2 m | 7.) _____ dm = .7 m |
| 3.) 3 dm = _____ m | 8.) _____ dm = .8 m |
| 4.) 4 dm = _____ m | 9.) 9 dm = _____ m |
| 5.) 5 dm = _____ m | 10.) 10 dm = 1 m |

THIS CRAYON MEASURES ABOUT 1 dm.



THIS PENCIL MEASURES ABOUT 2 dm.



NAME 2 OBJECTS THAT MEASURE ABOUT 1 dm.

NAME 2 OBJECTS THAT MEASURE ABOUT 2 dm.

I.O. # L-7 MEASURE LENGTHS IN TERMS OF THE DECIMETER

MEASURE THE LENGTH OF EACH EARTHWORM USING THE DECIMETER STRIP AND RECORD THE RESULTS.

1 DECIMETER

1 DECIMETER

RECORD HERE.

EARTH-WORM	HOW MANY DECIMETERS LONG?
A	___ dm
B	___ dm
C	___ dm
D	___ dm
E	___ dm

IF THESE WORMS WERE PLACED END TO END, DO YOU THINK THEY WOULD MEASURE 1 METER LONG? _____

I.O. # L-8 COMPARE LENGTHS IN METERS TO DECIMETERS

L-9 COMPARE LENGTHS IN DECIMETERS TO METERS

USING A METRIC RULER, MEASURE EACH OF THE FOLLOWING IN THE CORRECT UNITS BELOW.

OBJECT TO BE MEASURED	COLUMN I NEAREST m.	COLUMN II NEAREST dm	COLUMN III	COLUMN IV
METER STICK	1	10		
WIDTH OF DESK				
WIDTH OF CLASSROOM				
LENGTH OF CLASSROOM				
HEIGHT OF CLOSET				
HEIGHT OF CHALKBOARD				
YOUR HEIGHT				

1. WHICH COLUMN OF THE ABOVE MEASUREMENTS IS MORE ACCURATE? _____
EXPLAIN: _____
2. HOW WOULD YOU CHANGE EACH MEASURE FROM COLUMN II TO INCLUDE METERS AND DECIMETERS? FOR EXAMPLE: 14 dm = 1 m 4 dm. ENTER YOUR ANSWERS IN COLUMN III.
3. IN COLUMN IV, EXPRESS THE MEASUREMENTS IN METERS USING DECIMALS. THERE ARE 2 METHODS YOU COULD USE a.) FROM COLUMN III, IF THE MEASUREMENT IS 1 m 4 dm, CHANGE IT TO 1.4 m. b.) FROM COLUMN II, (USING THE CHART FROM ACTIVITY L-5, L-6) CHANGE 14 dm TO 1.4 m.

I.O. # L-10 CONVERT METERS TO DECIMETERS

L-11 CONVERT DECIMETERS TO METERS

1 METER = 10 DECIMETER

$$1 \text{ m} = 10 \text{ dm}$$

COMPLETE THE FOLLOWING:

1) $2 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

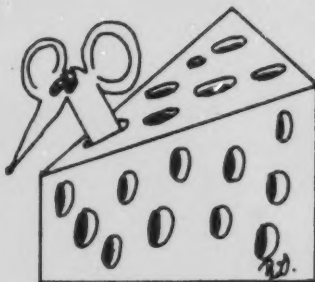
2) $4 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

3) $8 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

4) $20 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

5) $.5 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

6) $.8 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$



1 DECIMETER = .1 METER

$$1 \text{ dm} = .1 \text{ m}$$

7) $20 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

8) $50 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

9) $100 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

10) $400 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

11) $93 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

12) $47 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

FILL IN THE BLANKS:

A) $4.2 \text{ m} = \underline{4} \text{ m } \underline{2} \text{ dm or } \underline{42} \text{ dm}$

B) $6.8 \text{ m} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ dm}$

C) $12.1 \text{ m} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ dm}$

D) $6.9 \text{ m} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ dm}$

E) $10.1 \text{ m} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ dm}$

F) $7.6 \text{ m} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ dm}$

G) $85 \text{ dm} = \underline{8} \text{ m } \underline{5} \text{ dm or } \underline{8.5} \text{ m}$

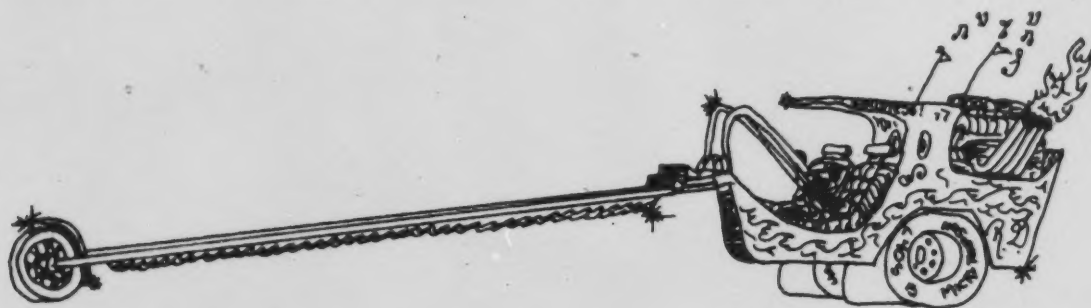
H) $64 \text{ dm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ m}$

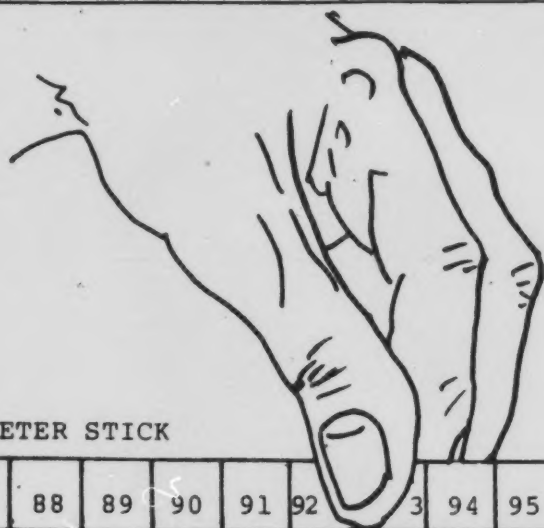
I) $11 \text{ dm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ m}$

J) $33 \text{ dm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ m}$

K) $402 \text{ dm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ m}$

L) $137 \text{ dm} = \underline{\hspace{1cm}} \text{ m } \underline{\hspace{1cm}} \text{ dm or } \underline{\hspace{1cm}} \text{ m}$





METER STICK

82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

----- ONE DECIMETER -----

10 DECIMETERS = 1 METER

ONE DECIMETER (1 dm)



100 CENTIMETERS = 1 METER

ONE CENTIMETER (1 cm)



THE STRIP SHOWN BELOW IS 20 CENTIMETERS LONG AND ONE CENTIMETER WIDE.

HOW MANY OF THESE STRIPS END TO END EQUAL ONE METER?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

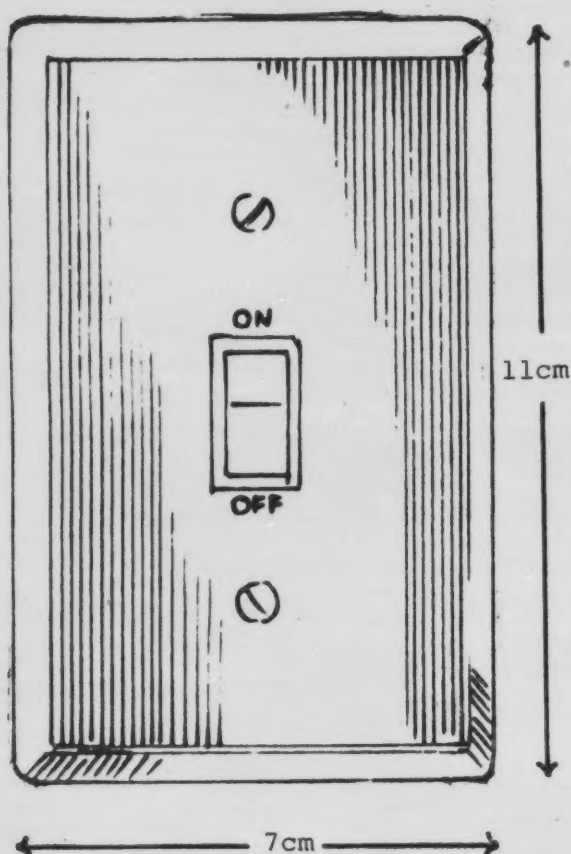
(CENTIMETER)

FILL IN THE BLANKS BELOW

100 cm = 1 m
 90 cm = .9 m
 80 cm = .8 m
 70 cm = ____ m
 60 cm = ____ m
 50 cm = ____ m
 ____ cm = .4 m
 ____ cm = .3 m
 ____ cm = .2 m
 10 cm = ____ m

9 cm = .09 m
 8 cm = .08 m
 7 cm = .07 m
 6 cm = ____ m
 5 cm = ____ m
 ____ cm = .04 m
 ____ cm = .03 m
 ____ cm = .02 m
 1 cm = ____ m

I.O. # L-13 RECOGNIZE LENGTHS IN TERMS OF THE CENTIMETER.

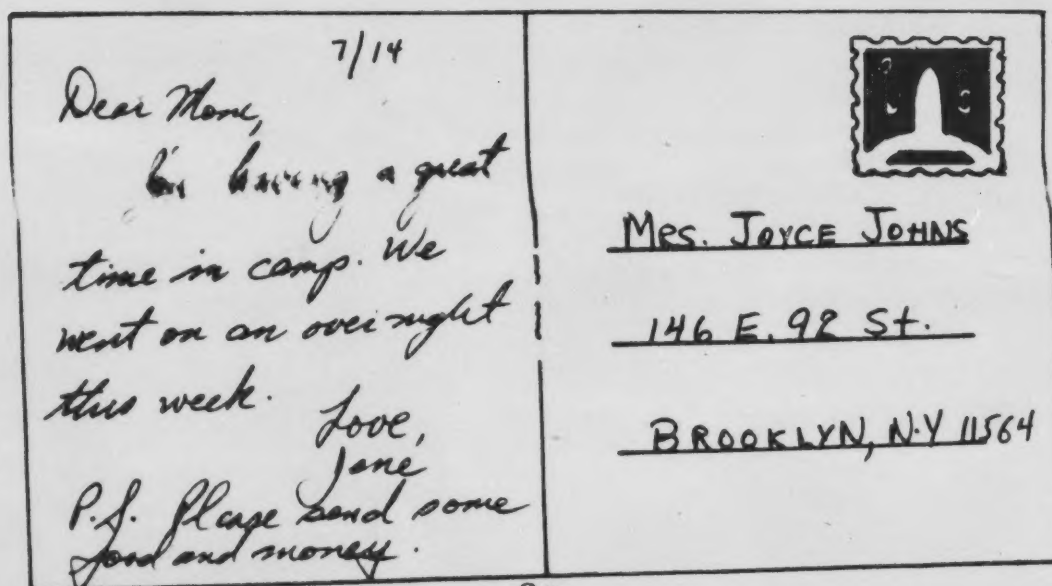
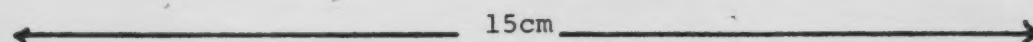
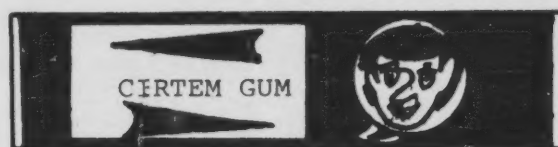


THE WIDTH OF YOUR PINKY IS ABOUT 1 cm.

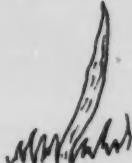
NICKEL



QUARTER



COLOR IN THE SPACES OF THE PUZZLE THAT HAVE PICTURES OF ITEMS THAT ARE SHORTER OR NARROWER THAN 1 CENTIMETER. WHAT NUMERAL APPEARS?

				
THUMB	FLY	FOOTBALL	SAFETY PIN	FIST
				
SHOE	WORM	ELEPHANT'S EYE	BOBBY PIN	DICTIONARY
				
TREE	KERNEL OF CORN	NAIL	TOOTHPICK	SHOELACE
				
APPLE	CAP	BALLOON	BLADE OF GRASS	BUSH
				
CAR	HAMMER	FOOT	ANT	PERSON

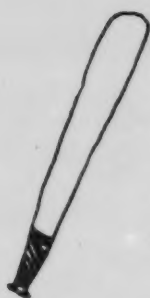
I.O. # L-14 ESTIMATE LENGTHS IN TERMS OF THE CENTIMETER

COMPLETE THE TABLE BELOW BY PLACING A CHECK IN THE APPROPRIATE COLUMN.

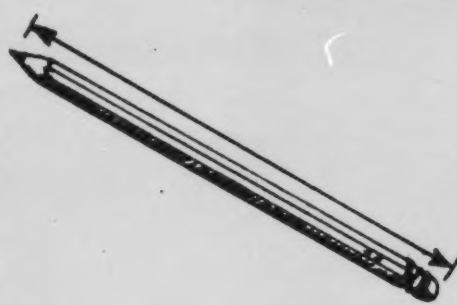
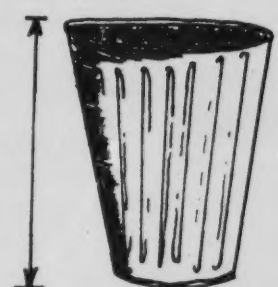
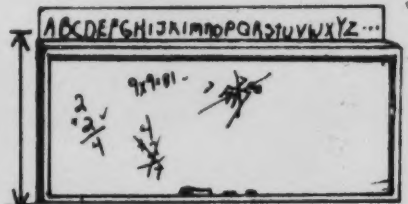
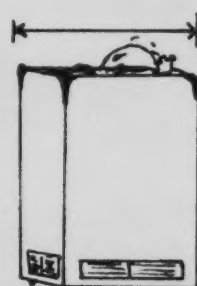
OBJECT	ABOUT THE SAME LENGTH AS A CENTIMETER	LONGER THAN A CENTIMETER	SHORTER THAN A CENTIMETER
1) DISTANCE FROM ELBOW TO TIP OF LONGEST FINGER			
2) LENGTH OF HAND			
3) WIDTH OF PALM			
4) LENGTH OF LONGEST FINGER			
5) LENGTH OF SHORTEST FINGER			
6) WIDTH OF FINGER NAIL			

CENTIMETERS

100	BASEBALL BAT
90	HEIGHT OF TEACHER'S CHAIR
80	HEIGHT OF TEACHER'S DESK
70	LENGTH OF A TENNIS RACKET
60	HEIGHT OF A MEDIUM DOG
50	LENGTH OF A NEWBORN BABY
40	WIDTH OF A LARGE TV SCREEN
30	LENGTH OF LOOSELEAF BINDER
20	WIDTH OF A TELEPHONE BOOK
10	HEIGHT OF SODA CAN



USING THE TABLE ON THE PRECEDING PAGE ESTIMATE IN CENTIMETERS THE LENGTH OF THE FOLLOWING PICTURES:

 1. PENCIL _____	2. WASTE BASKET _____ 
3. CHALKBOARD _____ 	4. _____ OF WATER FOUNTAIN _____ 
5. LENGTH OF FIRE EXTINGUISHER _____ 	6. TEACHER'S SHOE _____ 

A. CUT OUT THE CENTIMETER RULER AT THE BOTTOM OF THE PAGE.

THIS RULER IS _____ LONG.

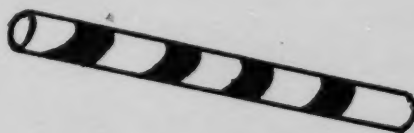
B. USE THE CENTIMETER RULER TO MEASURE THE LINE SEGMENTS BELOW. HOW MANY CENTIMETERS LONG IS EACH SEGMENT?

1	_____	_____ cm
2	_____	_____ cm
3	_____	_____ cm
4	_____	_____ cm
5	_____	_____ cm

C. MEASURE THE PICTURES BELOW. GIVE THE MEASURE OF EACH ONE.



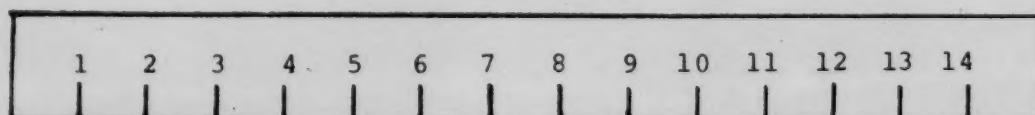
_____ cm



_____ cm



_____ cm



LET'S MEASURE OBJECTS. FIRST GUESS THE LENGTH IN CENTIMETERS OF THE OBJECTS IN THE CHART. WRITE YOUR GUESS IN THE SPACE. THEN FIND THE ACTUAL MEASURE.



WHAT TO MEASURE	GUESS MEASURE	ACTUAL MEASURE
YOUR PENCIL	cm	cm
A PIECE OF CHALK		
YOUR LITTLE FINGER		
A 12 INCH RULER		
YOUR FOOT		
A COMB		
A BOOK		
BILLY BUG'S PATH		



DIRECTIONS: YOU BE THE ARTIST.
DRAW THE FOLLOWING PICTURE IN THE FRAME:

A TREE 9 cm HIGH

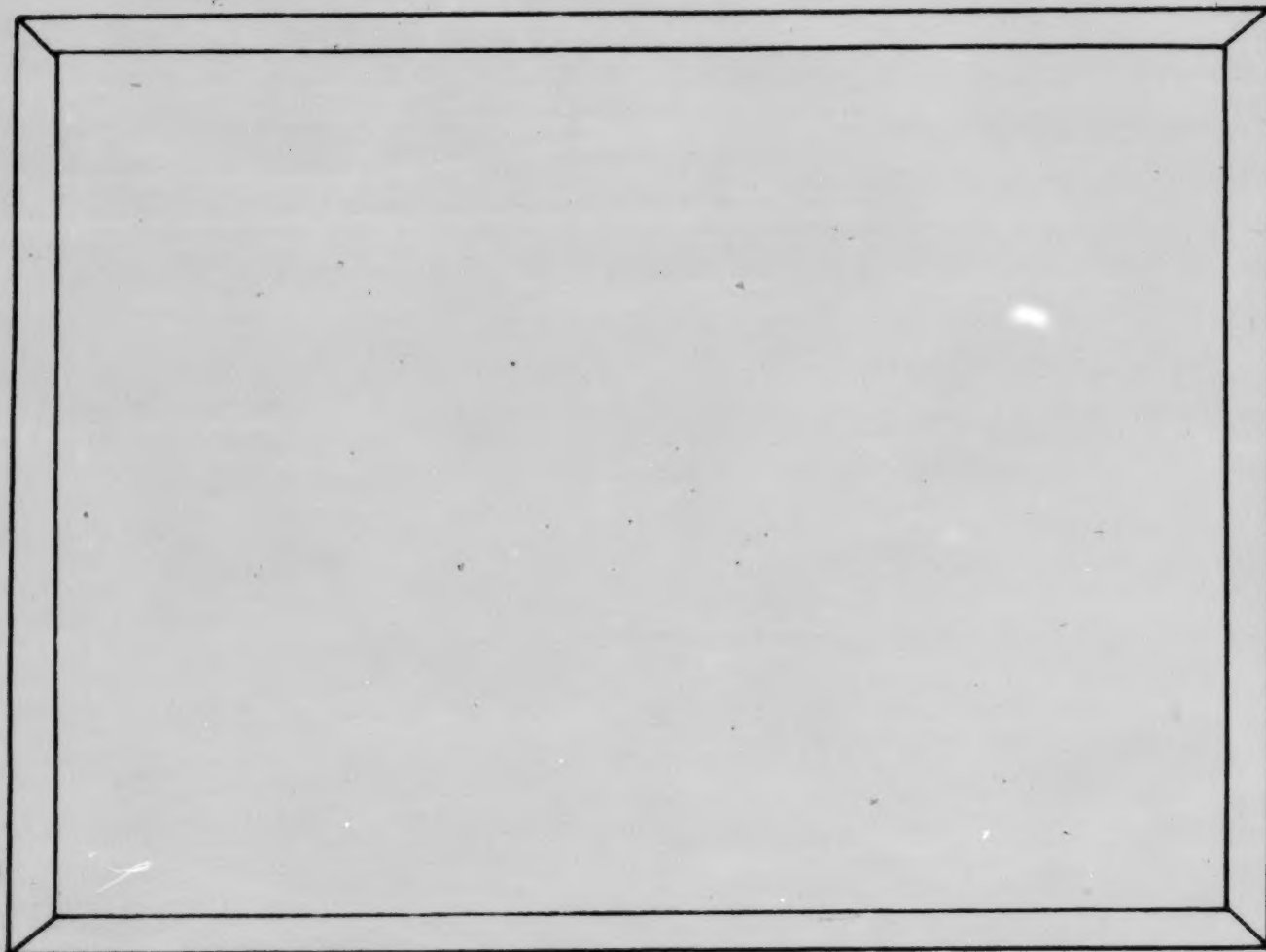
A WOMAN 4 cm TALL

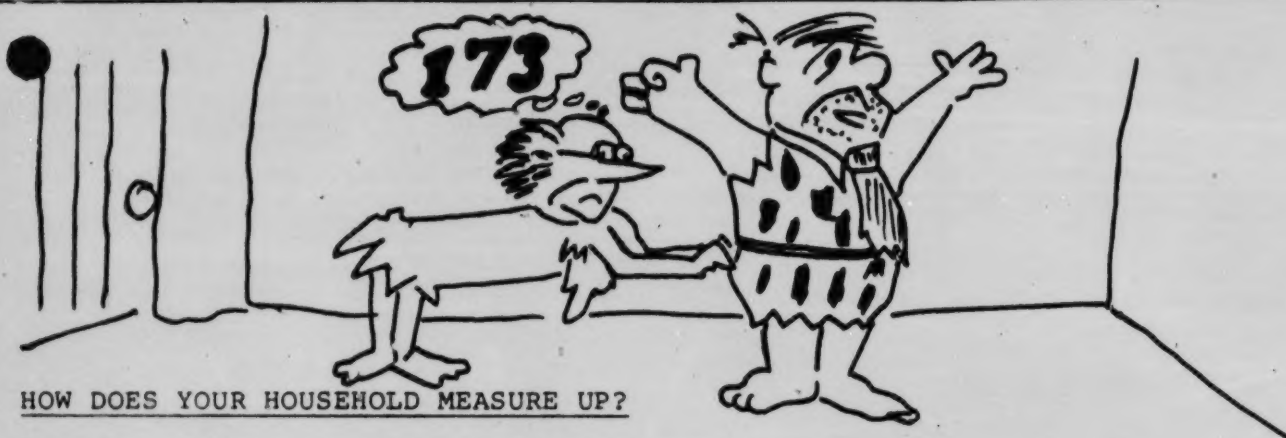
A BUSH 3 cm HIGH

A FENCE 2 cm HIGH

A DOG 1 cm HIGH

A BIRD 8 cm FROM THE GROUND





HOW DOES YOUR HOUSEHOLD MEASURE UP?

AN AVERAGE METRIC WOMAN

MEMBERS OF YOUR HOUSEHOLD



Height 163 cm
Neck 34 cm
Bust 92 cm
Waist 69 cm
Hips 94 cm

NAME

NAME

NAME

NAME

AN AVERAGE METRIC MAN



Height 182 cm
Waist 87 cm
Neck 40 cm
Chest 110 cm
Hips 87 cm

NAME

NAME

NAME

NAME



I. CONVERT TO CENTIMETERS.



1. 1 m = 100 cm

2. 2 m = _____ cm

3. 5 m = _____ cm

4. 5 m = _____ cm

5. 7 m = _____ cm

6. 10 m = _____ cm

7. 15 m = _____ cm

8. 100 m = _____ cm

9. 83 m = _____ cm

10. 71 m = _____ cm

11. 1.3 m = _____ cm

12. 9.2 m = _____ cm

13. 4.6 m = _____ cm

14. 8.7 m = _____ cm

15. 2.63 m = _____ cm

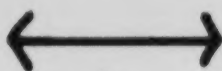
16. 5.18 m = _____ cm

17. 43.2 m = _____ cm

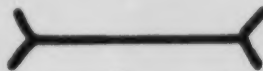
18. 68.3 m = _____ cm

19. 27.65 m = _____ cm

20. 13.46 m = _____ cm



A



B

CONVERT TO METERS

WHICH IS LONGER?

1. 100 cm = 1 m

2. 400 cm = m

3. 700 cm = m

4. 900 cm = m

5. 1800 cm = m

6. 4300 cm = m

7. 550 cm = m

8. 225 cm = m

9. 368 cm = m

10. 923 cm = m

11. 1238 cm = m

12. 4012 cm = m

13. 7861 cm = m

14. 5083 cm = m

15. 91 000 cm = m

16. 83 465 cm = m

17. 50 cm = m

18. 10 cm = m

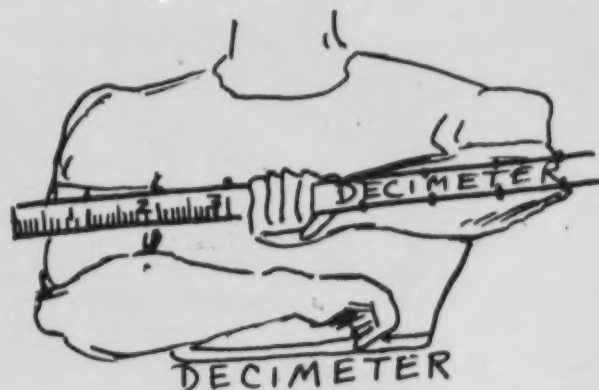
19. 83 cm = m

20. 45 cm = m

1 meter (m) = 10 decimeters (dm)

1 meter = 100 centimeters (cm)

1 decimeter = 10 centimeters



1. WHICH ARE THE SAME AS 500 cm?	50 dm	50 m	5 m	5 dm
2. WHICH ARE THE SAME AS 7 m?	70 dm	700 dm	70 cm	700 cm
3. WHICH ARE THE SAME AS 140 dm?	14 m	1400 cm	1400 m	140 cm
4. WHICH ARE THE SAME AS 36 m ?	3600 dm	3600 cm	360 cm	360 cm
5. WHICH ARE THE SAME AS 8900 cm?	89 m	890 m	89 dm	890 dm
6. WHICH ARE THE SAME AS 250 dm?	2500 m	25 m	2500 cm	25 cm
7. WHICH ARE THE SAME AS 610 m?	61000 dm	6100 cm	6100 dm	6100 cm
8. WHICH ARE THE SAME AS 4700 cm?	470 dm	47 m	47 dm	470 m

COMPLETE

- 9) 4 dm = _____ cm 10) 900 cm = _____ m 11) _____ dm = 180 cm
- 12) 3 m = _____ cm 13) _____ m = 150 dm 14) 17 m = _____ cm
- 15) _____ cm = 23 dm 16) 370 dm = _____ m 17) 56 m = _____ cm
- 18) 680 cm = _____ dm

(EXERCISES CONTINUED ON NEXT PAGE)

CIRCLE THE LONGER MEASUREMENT

19) 4 m or 35 dm

24) 32 m or 320 cm

20) 60 cm or 7 dm

25) 270 dm or 26 m

21) 80 cm or 8 m

26) 94 dm or 950 cm

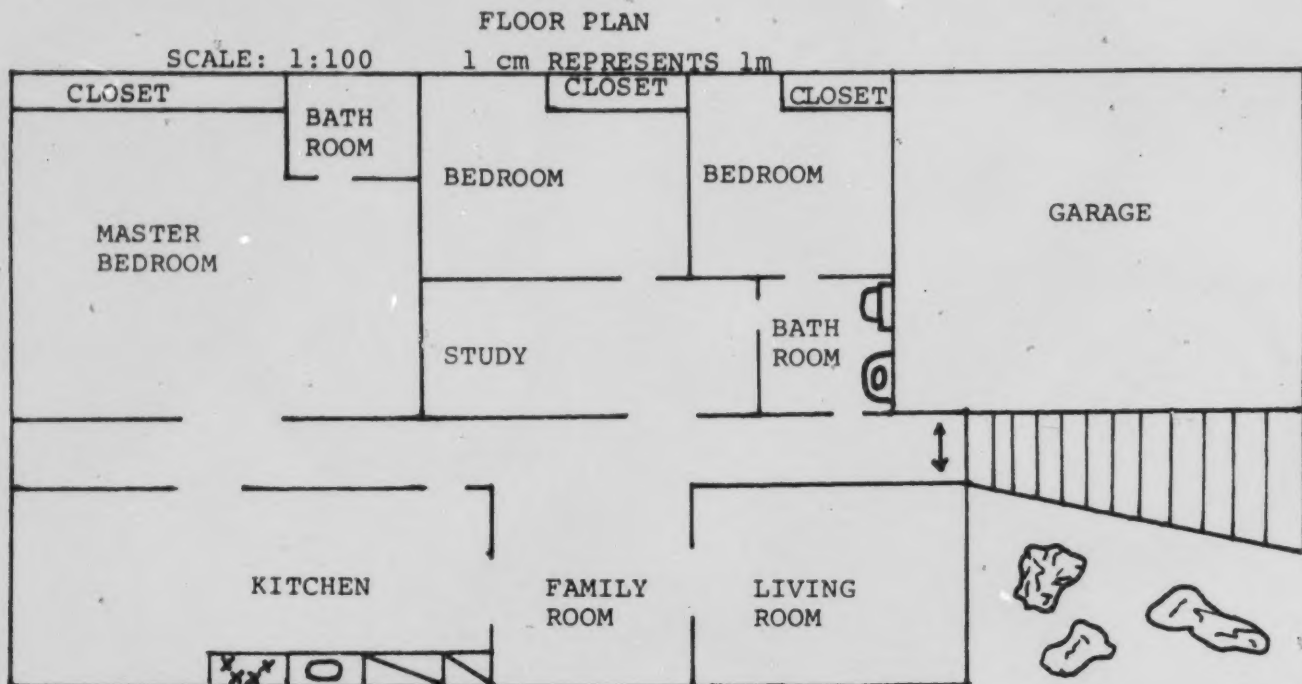
22) 5600 cm or 56 dm

27) 5900 cm or 54 m

23) 7 m or 700 dm

28) 92 dm or 85 m





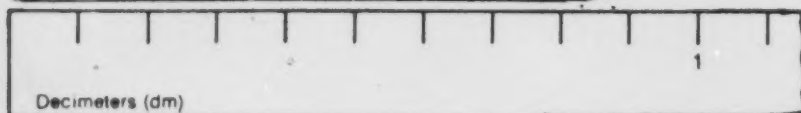
A "FLOOR PLAN" OF A ROOM (OR A HOUSE) IS A SCALE DRAWING. FIRST YOU'LL USE A FLOOR PLAN. LATER YOU CAN MAKE YOUR OWN FLOOR PLAN.

1:100 MEANS THAT 1 CM ON THE DRAWING (SCALE) REPRESENTS 100 CM (ACTUAL). THEREFORE THE ACTUAL WIDTH OF THE HALL MUST BE 100 CM OR 1 METER.

DO:

USE THE SCALE DRAWING TO FIND LENGTHS IN THE REAL HOUSE:

1. GARAGE (IT'S A 2-CAR GARAGE) _____ m BY _____ m
2. HOW LONG IS THE CLOSET IN THE MASTER BEDROOM _____ m
3. HOW WIDE IS THE HOUSE (SIDE-TO-SIDE)? _____ m
4. WHICH IS THE LARGEST ROOM? _____
5. HOW BIG IS THE STUDY? _____ m BY _____ m
6. HOW BIG IS THE LIVING ROOM? _____ m BY _____ m
7. HOW BIG IS THE KITCHEN? _____ m BY _____ m
8. HOW LONG IS THE MASTER BEDROOM? _____ m
9. HOW BIG IS THE BATHROOM? (THEY ARE BOTH THE SAME SIZE) _____ m BY _____ m



actual size

THERE ARE 10 DECIMETERS (10 dm)
IN 1 METER.

actual size

THERE ARE 100 CENTIMETERS
(100 cm) IN 1 METER.

actual size

THERE ARE 1000
MILLIMETERS (1000 mm)
IN 1 METER.

FILL IN THE BLANKS

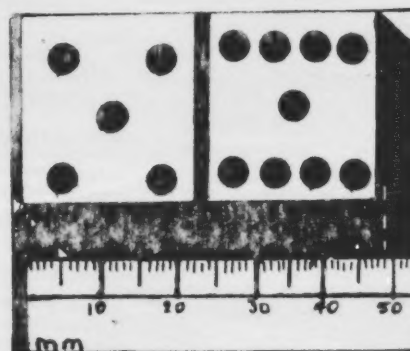
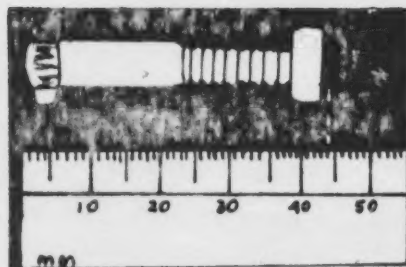
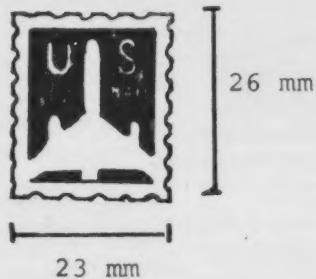
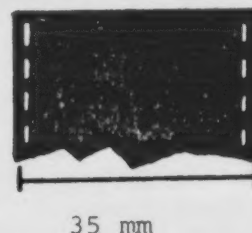
- | | | |
|----------------------|---------------------|----------------------|
| 1) 1000 mm = 1 METER | 11) 90 mm = .09 m | 20) 9 mm = .009 m |
| 2) 900 mm = .9 m | 12) 80 mm = .08 m | 21) 8 mm = .008 m |
| 3) 800 mm = .8 m | 13) 70 mm = ____ m | 22) 7 mm = ____ m |
| 4) 700 mm = ____ m | 14) ____ mm = .06 m | 23) 6 mm = ____ m |
| 5) 600 mm = ____ m | 15) 50 mm = ____ m | 24) ____ mm = .005 m |
| 6) ____ mm = .5 m | 16) ____ mm = .04 m | 25) ____ mm = .004 m |
| 7) ____ mm = .4 m | 17) ____ mm = .03 m | 26) 3 mm = ____ m |
| 8) 300 mm = .3 m | 18) 20 mm = ____ m | 27) 2 mm = ____ m |
| 9) 200 mm = .2 m | 19) 10 mm = .01 m | 28) ____ mm = .001 m |
| 10) 100 mm = .1 m | | |

I.O. # L-21 RECOGNIZE LENGTHS IN TERMS OF THE MILLIMETER.



THE MILLIMETER mm

THE SIZE OF CAMERA FILM IS GIVEN IN MILLIMETERS. FOR EXAMPLE, 35 mm FILM IS 35 MILLIMETERS WIDE.

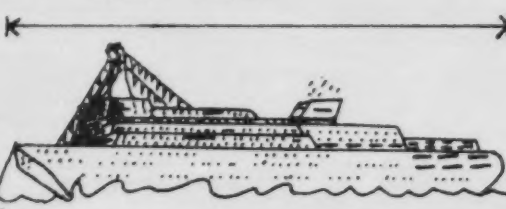
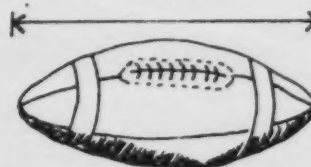
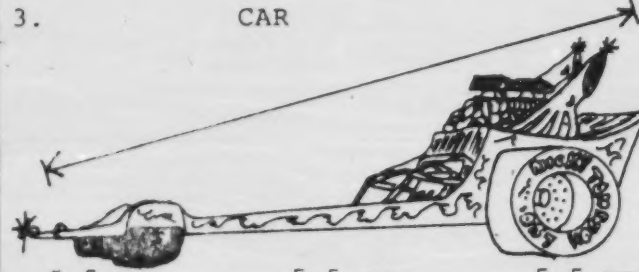
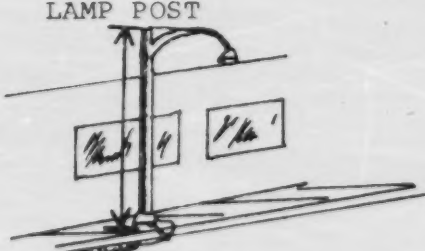
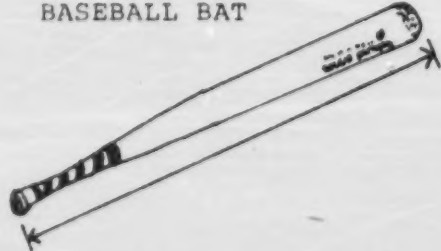
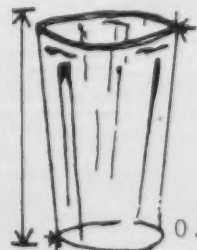


NAME FIVE OBJECTS THAT ARE GREATER THAN FIVE MILLIMETERS BUT LESS THAN FIFTY MILLIMETERS.

1. _____
2. _____
3. _____
4. _____
5. _____



CIRCLE THE MOST REASONABLE MEASUREMENT FOR EACH THING PICTURED.

1. OCEAN LINER  300 m 300 cm 300 mm	2. FOOTBALL  280 dm 280 cm 280 mm
3. CAR  5.5 m 5.5 cm 5.5 mm	4. CAT  0.23 m 0.23 cm 0.23 mm
5. THUMB TACK  10 dm 10 cm 10 mm	6. LAMP POST  900 m 900 cm 900 mm
7. BASEBALL BAT  850 m 850 cm 850 mm	8. DRINKING GLASS  0.13 m 0.13 cm 0.13 mm

I.O. # L-22 MEASURE LENGTHS IN TERMS OF THE MILLIMETER

MEASURE THE LENGTH OF EACH TO THE NEAREST MILLIMETER USING THE MILLIMETER RULER AT THE RIGHT.



a. _____



b. _____



c. _____



d. _____



e. _____



f. _____



g. _____



h. _____

MEASURE THESE SEGMENTS IN mm

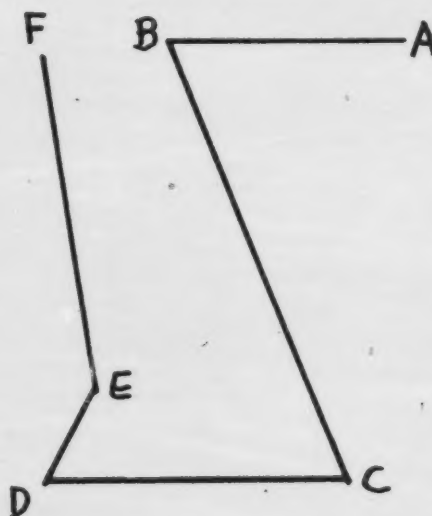
$\overline{AB} =$

$\overline{BC} =$

$\overline{CD} =$

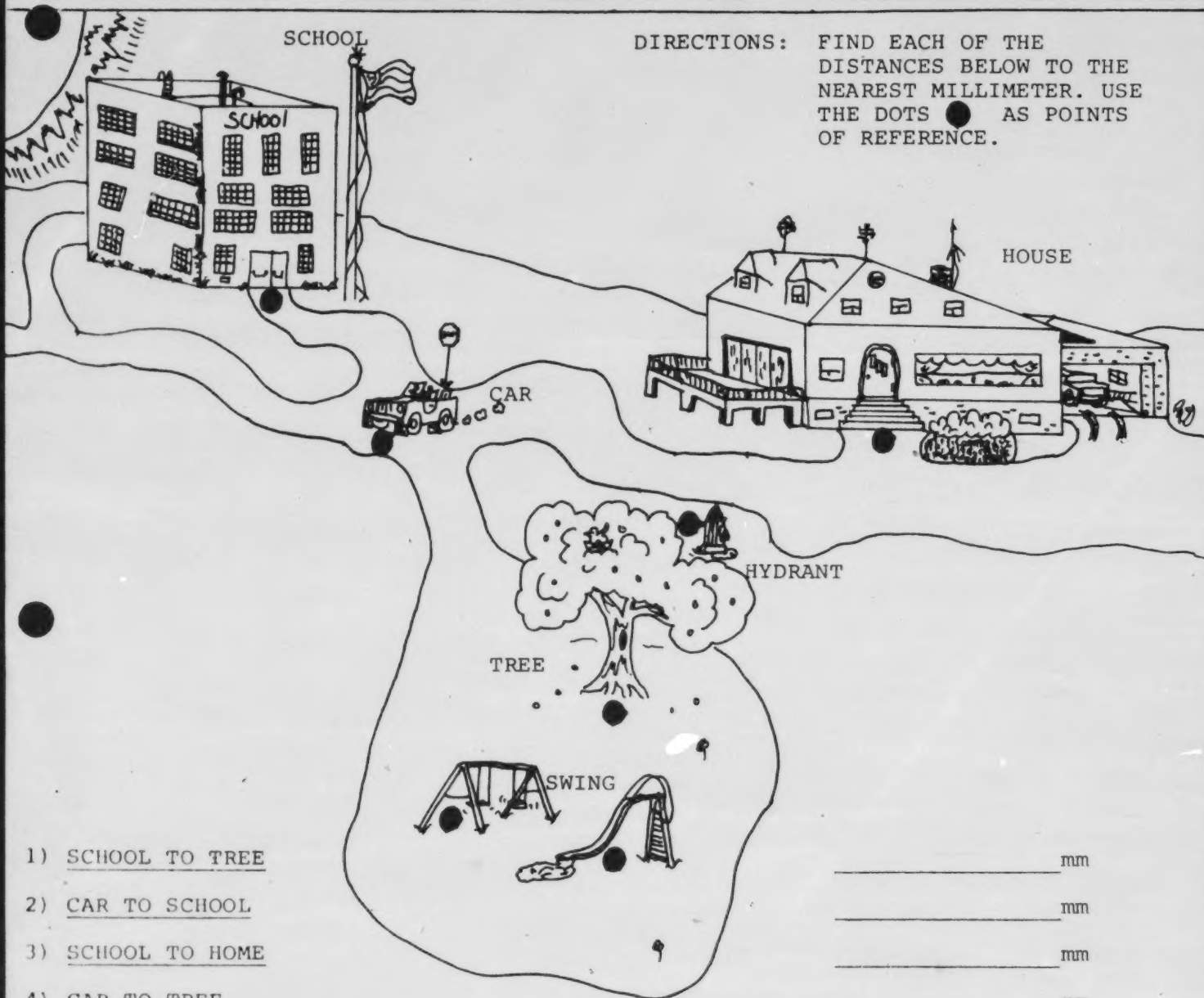
$\overline{DE} =$

$\overline{EF} =$



mm cm

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230



DIRECTIONS: FIND EACH OF THE DISTANCES BELOW TO THE NEAREST MILLIMETER. USE THE DOTS ● AS POINTS OF REFERENCE.

- 1) SCHOOL TO TREE
- 2) CAR TO SCHOOL
- 3) SCHOOL TO HOME
- 4) CAR TO TREE
- 5) CAR TO HOME
- 6) TREE TO SWING
- 7) SWING TO HOME
- 8) HOME TO HYDRANT
- 9) CAR TO SWING
- 10) TREE TO HYDRANT

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

_____ mm

I.O. # L-23 CONVERT MILLIMETERS TO CENTIMETERS

L-24 CONVERT CENTIMETERS TO MILLIMETERS

EACH LINE BELOW HAS BEEN MEASURED TO THE NEAREST cm AND TO THE NEAREST mm.

A _____

B _____

C _____

D _____

	I NEAREST cm	II NEAREST mm
A	<u>2</u>	<u>20</u>
B	<u>4</u>	<u>40</u>
C	<u>5</u>	<u>50</u>
D	<u>7</u>	<u>70</u>

1. WHAT RELATIONSHIP IS THERE BETWEEN THE MEASUREMENTS IN COLUMN I AND THE MEASUREMENTS IN COLUMN II?
2. WHAT RELATIONSHIP IS THERE BETWEEN THE MEASUREMENTS IN COLUMN II AND THE MEASUREMENTS IN COLUMN I?
3. HOW WOULD YOU CONVERT CENTIMETERS TO MILLIMETERS?
4. HOW WOULD YOU CONVERT MILLIMETERS TO CENTIMETERS?

COMPLETE THE FOLLOWING TABLE:

LENGTH IN CENTIMETERS	LENGTH IN MILLIMETERS	NAME AN OBJECT ABOUT THIS SIZE
<u>1</u> cm	<u>10</u> mm	_____
<u>2</u> cm	_____ mm	_____
<u>3</u> cm	_____ mm	_____
_____ cm	<u>70</u> mm	_____
_____ cm	<u>5</u> mm	_____
_____ cm	<u>1</u> mm	_____
<u>2.5</u> cm	<u>25</u> mm	_____
<u>4.7</u> cm	_____ mm	_____

METRIC CONVERSIONS

$1 \text{ m} = 10 \text{ dm}$

$1 \text{ cm} = 10 \text{ mm}$

$1 \text{ m} = 100 \text{ cm}$

$1 \text{ dm} = 10 \text{ cm}$

$1 \text{ m} = 1000 \text{ mm}$

$1 \text{ dm} = 100 \text{ mm}$

METERS	DECIMETERS	CENTIMETERS	MILLIMETERS
0.436 m	4.36 dm	43.6 cm	436 mm
			1522 mm
		4 cm	
	.51 dm		
			7 mm
0.209 m			209 mm
	0.97 dm		97 mm
1.005 m			1005 mm
	7 dm		
2.2 m			
			2450 mm
		0.4 cm	

I.O. # L-25 CONVERT WITHIN METERS, CENTIMETERS AND MILLIMETERS

COMPLETE THESE EQUATIONS.

1. 40 mm = _____ cm

2. 80 mm = _____ cm

3. 20 mm = _____ cm

4. 190 mm = _____ cm

5. 3 cm = _____ cm

6. 5 cm = _____ mm

7. 7 cm = _____ mm

8. 12 cm = _____ mm

9. 1000 mm = _____ m

10. 4000 mm = _____ m

11. 9000 mm = _____ m

12. 6000 mm = _____ m

13. 2 m = _____ mm

14. 5 m = _____ mm

15. 8 m = _____ mm

16. 12 m = _____ mm

CONVERT THESE UNITS.

1. 25 mm = _____ cm

2. 83 cm = _____ mm

3. 1.2 cm = _____ mm

4. 3.6 cm = _____ mm

5. 4.19 m = _____ cm

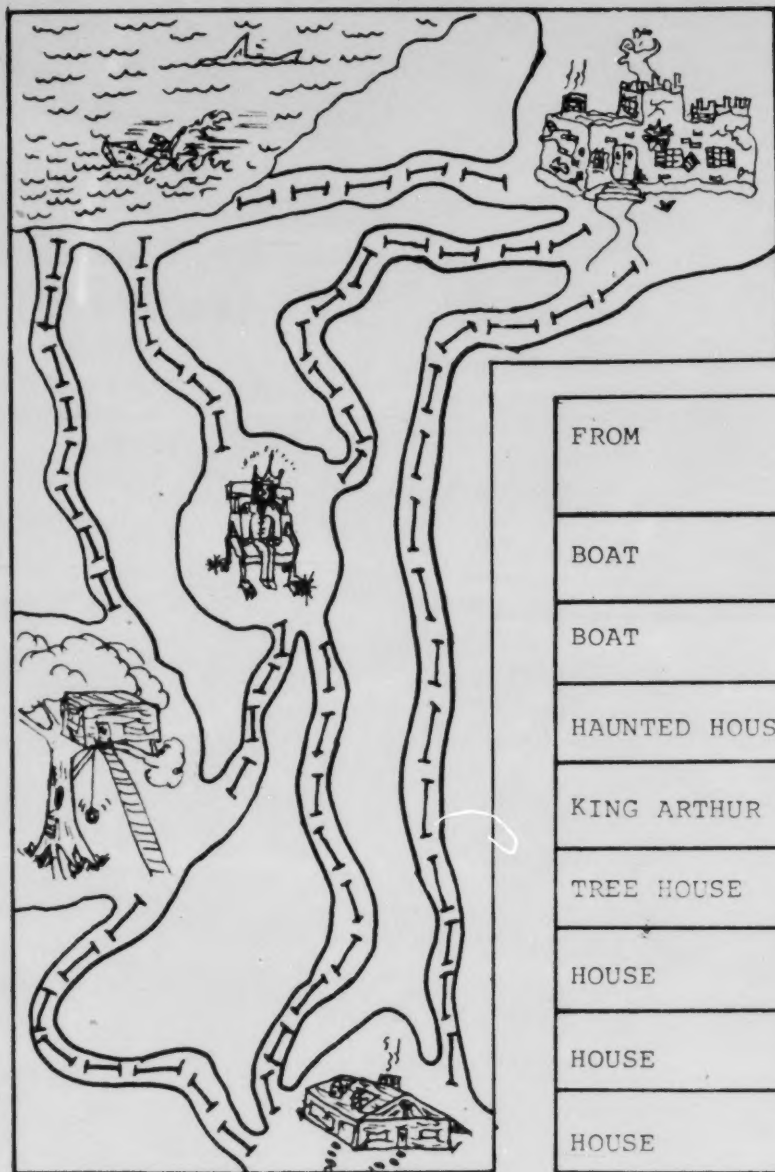
6. 2.1 m = _____ cm

7. 283 cm = _____ m

8. 62 cm = _____ mm

9. 5 cm = _____ m

10. 70 mm = _____ cm



DIRECTIONS:

1.  STANDS FOR 1 DEKAMETER
2. COUNT HOW MANY DEKAMETERS EACH DISTANCE IS AND RECORD.
3. CHANGE EACH MEASUREMENT TO METERS.

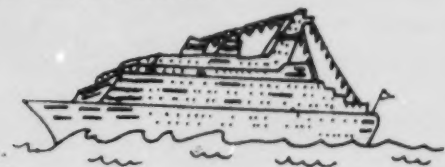
1 DEKAMETER = 10 METERS

RECORD HERE

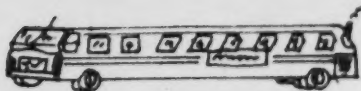
FROM	TO	DISTANCE (IN DEKAMETERS)	DISTANCE (IN METERS)
BOAT	HAUNTED HOUSE	dam	m
BOAT	KING ARTHUR	dam	m
HAUNTED HOUSE	KING ARTHUR	dam	m
KING ARTHUR	TREE HOUSE	dam	m
TREE HOUSE	BOAT	dam	m
HOUSE	TREE HOUSE	dam	m
HOUSE	KING ARTHUR	dam	m
HOUSE	HAUNTED HOUSE	dam	m

1 HECTOMETER = 100 METERS

1. CIRCLE THE PICTURES OF THOSE OBJECTS THAT COULD BE LONGER THAN 1 HECTOMETER.



1. OCEAN LINER



2. BUS



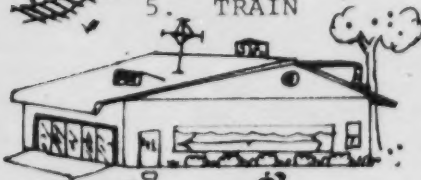
3. BRIDGE



4. RIVER



5. TRAIN



6. HOUSE

2. GIVE CORRECT ANSWERS ON RIGHT.

ANSWER THESE QUESTIONS.

- A. 800 m = _____ hm
B. 200 m = _____ hm
C. 1500 m = _____ hm
D. 800 m = _____ hm
E. 1 m = _____ m
F. 13 hm = _____ m
G. 7 hm = _____ m
H. 36 hm = _____ m
I. A FOOTBALL FIELD IS ABOUT _____ hm (OR _____ m) LONG.
J. A LONG TRAIN COULD BE ABOUT _____ hm (OR _____ m) LONG.
K. A MOUNTAIN COULD BE ABOUT _____ hm (OR _____ m) HIGH.
L. A SMALL AIRPLANE COULD FLY ABOUT _____ hm (OR _____ m) HIGH.
M. I COULD WALK ABOUT _____ hm (OR _____ m) IN 5 MINUTES.



SUPPOSE YOU WANT TO MEASURE THE DISTANCE YOU TRAVEL ON A CAR TRIP.

YOU COULD MEASURE THE DISTANCE IN METERS, BUT IT WOULDN'T BE VERY CONVENIENT. A LARGER UNIT WOULD BE MUCH MORE USEFUL. IN THE METRIC SYSTEM, THE LARGE UNIT OF LENGTH IS THE

K I L O M E T E R

SINCE YOU KNOW HOW LONG A METER REALLY IS, YOU CAN IMAGINE HOW LONG A KILOMETER, OR 1000 METERS, REALLY IS. HERE ARE SOME EXAMPLES TO HELP YOU PICTURE THE LENGTH OF A KILOMETER.

11 FOOTBALL FIELDS, END TO END, ARE APPROXIMATELY 1 km LONG.

8 CITY BLOCKS ARE APPROXIMATELY 1 km LONG.

2 $\frac{1}{2}$ EMPIRE STATE BUILDINGS ON TOP OF ONE ANOTHER ARE APPROXIMATELY 1 km HIGH.

75 BOXCARS ON A FREIGHT TRAIN ARE APPROXIMATELY 1 km LONG.

THE KILOMETER IS THE LONGEST METRIC UNIT COMMONLY USED TO MEASURE LENGTHS AND DISTANCES. IT IS USED TO MEASURE DISTANCES BETWEEN TOWNS, CITIES, STATES, AND SO ON.



WOULD YOU MEASURE THESE DISTANCES IN KILOMETERS? ANSWER YES OR NO.

- A. THE DISTANCE BETWEEN TWO CITIES _____.
- B. THE LENGTH OF A GARDEN _____.
- C. THE DISTANCE ACROSS AN OCEAN _____.
- D. THE LENGTH OF A CLASSROOM _____.

THE KILOMETER IS A STANDARD UNIT FOR MEASURING DISTANCE.
THE SYMBOL FOR KILOMETER IS km.

KILOMETERS ARE USED TO MEASURE HOW FAR IT IS FROM ONE
PLACE TO ANOTHER. $1000 \text{ m} = 1 \text{ km}$

A. NAME A PLACE THAT YOU THINK IS ABOUT 1 KILOMETER FROM YOUR SCHOOL _____.

B. PUT A ✓ BY EACH DISTANCE NAMED BELOW THAT IS SHORTER THAN A
KILOMETER.

- _____ 1. FROM MY HOME TO SCHOOL
- _____ 2. FROM MY CLASSROOM TO THE LUNCHROOM
- _____ 3. FROM THE TOP OF A TREE TO THE GROUND
- _____ 4. FROM THE EARTH TO THE MOON
- _____ 5. FROM THE BEGINNING OF A RIVER TO ITS END
- _____ 6. FROM MY SCHOOL TO A PLACE OF WORSHIP
- _____ 7. FROM MY HOME TO THE RAILROAD STATION.

FILL IN THE BEST ENDING FOR EACH SENTENCE

1. I COULD WALK 6 KILOMETERS IN _____.
4 HOURS 5 MINUTES 1 DAY
2. EVERY MORNING JANE'S FATHER RUNS _____.
30 km 2 km 200 km
3. ON A 2 - HOUR PLANE TRIP, JOEL WENT _____.
5 km 1500 km 10,000 km
4. ON ONE DAY ON THEIR VACATION, SUE'S FAMILY DROVE _____.
500 km 6000 km 6 km

WORKING WITH KILOMETERS

USE YOUR CENTIMETER RULER TO FIND THESE DISTANCES. THE MAP SCALE
IS 1 cm = 200 km. ON THE MAP, THE DISTANCE BETWEEN PORTLAND, OREGON
AND HELENA, MONTANA IS 4 cm. SINCE 1 cm = 200 km, 4 cm = 800 km.
THE DISTANCE BETWEEN PORTLAND AND HELENA IS 800 km.
THE MAP IS LOCATED ON THE FOLLOWING PAGE.

FIND THE DISTANCES BETWEEN THE FOLLOWING CITIES.

- 1) CHICAGO, ILLINOIS AND ST. LOUIS, MISSOURI _____
- 2) NEW YORK, NEW YORK AND RALEIGH, NORTH CAROLINA _____
- 3) MEMPHIS, TENNESSEE AND LITTLE ROCK, ARKANSAS _____
- 4) MILWAUKEE, WISCONSIN AND MIAMI, FLORIDA _____
- 5) SALT LAKE CITY, UTAH AND LAS VEGAS, NEVADA _____
- 6) BUFFALO, NEW YORK AND DODGE CITY, KANSAS _____
- 7) PITTSBURGH, PENNSYLVANIA AND NEW YORK, NEW YORK _____
- 8) DODGE CITY, KANSAS AND ALBANY, NEW YORK _____
- 9) HELENA, MONTANA AND RENO, NEVADA _____
- 10) MONTREAL, CANADA AND MIAMI, FLORIDA _____
- 11) SEATTLE, WASHINGTON AND OMAHA, NEBRASKA _____
- 12) SAN FRANCISCO, CALIFORNIA AND SAN DIEGO, CALIFORNIA _____
- 13) LOS ANGELES, CALIFORNIA AND TOPEKA, KANSAS _____
- 14) DALLAS, TEXAS AND JACKSON, MISSISSIPPI _____
- 15) NEW ORLEANS, LOUISIANA AND CASPER, WYOMING _____
- 16) DENVER, COLORADO AND EL PASO, TEXAS _____
- 17) TORONTO, CANADA AND TULSA, OKLAHOMA _____
- 18) WASHINGTON, DC AND SALT LAKE CITY, UTAH _____
- 19) MOBILE, ALABAMA AND LOS ANGELES, CALIFORNIA _____
- 20) PORTLAND, OREGON AND TULSA, OKLAHOMA _____

Scale

1 cm = 200 km





RECORD HERE

FROM	TO	MAP DISTANCE IN	
		CENTIMETERS	KILOMETERS
MIAMI	HAVANA	cm	km
MIAMI	SAN JUAN	cm	km
MIAMI	PANAMA	cm	km
MIAMI	CARACAS	cm	km
HAVANA	SAN JUAN	cm	km
HAVANA	PANAMA	cm	km
HAVANA	CARACAS	cm	km
SAN JUAN	PANAMA	cm	km
SAN JUAN	CARACAS	cm	km
PANAMA	CARACAS	cm	km

DIRECTIONS:

1. ON THE MAP 1 cm STANDS FOR 200 km.
2. MEASURE THE DISTANCE BETWEEN CITIES IN CENTIMETERS AND RECORD.
3. HOW MANY KILOMETERS BETWEEN CITIES?

CONVERTING WITHIN THE METRIC SYSTEM

THE MOST COMMONLY USED LINEAR METRIC
UNITS ARE THOSE SHOWN IN THE TABLE
AT THE RIGHT.

10 mm = 1 cm
100 cm = 1 m
1000 mm = 1 m
1000 m = 1 km

CONVERSION CHART

<u>TO CHANGE FROM</u>	<u>TO</u>	<u>DO THE FOLLOWING</u>
KILOMETERS	METERS	MULTIPLY BY 1000
METERS	CENTIMETERS	MULTIPLY BY 100
CENTIMETERS	MILLIMETERS	MULTIPLY BY 10
MILLIMETERS	CENTIMETERS	DIVIDE BY 10
CENTIMETERS	METERS	DIVIDE BY 100
METERS	KILOMETERS	DIVIDE BY 1000

<u>EXAMPLE</u>	<u>OPERATION</u>
1 km = 1000 m	x BY 1000
12 m = 1200 cm	x BY 100
36 cm = 360 mm	x BY 10
460 mm = 46 cm	÷ BY 10
863 cm = 8.63 m	÷ BY 100
426 m = .426 km	÷ BY 1000
12.6 km = 12600 m	
.36 cm = 3.6 m	
162 mm = 16.2 cm	

<u>EXAMPLE</u>	<u>OPERATION</u>
22 cm = _____ mm	
38 km = _____ m	
127 mm = _____ cm	
340 m = _____ km	
8.96 m = _____ cm	
64.6 cm = _____ mm	
69.5 cm = _____ m	
3.3 km = _____ m	
1495 m = _____ km	

CONVERTING WITHIN THE METRIC SYSTEMREMEMBER

TO CONVERT FROM LARGER TO SMALLER, MULTIPLY

TO CONVERT FROM SMALLER TO LARGER, DIVIDE

COMPLETE THE FOLLOWING

- | | |
|------------------------|------------------------|
| 1. 22 m = _____ cm | 2. 65 mm = _____ cm |
| 3. 105 mm = _____ cm | 4. 14 mm = _____ cm |
| 5. 3.1 cm = _____ mm | 6. 2.4 cm = _____ mm |
| 7. 6.5 cm = _____ mm | 8. 12.8 cm = _____ mm |
| 9. 105 cm = _____ m | 10. 145 cm = _____ m |
| 11. 123 cm = _____ m | 12. 1034 cm = _____ m |
| 13. 1.52 m = _____ cm | 14. 1.35 m = _____ cm |
| 15. 10.20 m = _____ cm | 16. 2.05 m = _____ cm |
| 17. 1400 m = _____ km | 18. 4.315 km = _____ m |
| 19. 6200 m = _____ km | 20. 2.655 km = _____ m |

CIRCLE THE LONGEST UNIT

- | | |
|------------------------------|--------------------------------|
| 1) 10 mm 0.9 cm 9 mm | 2) 22 mm 2.2 cm 23 mm |
| 3) 31 cm 300 mm 30 cm | 4) 1.4 cm 15 mm 1.3 cm |
| 5) 114 cm 1.2 m 110 cm | 6) 130 cm 1.42 m 170 cm |
| 7) 1.35 m 120 cm 1.4 m | 8) 2.68 m 200 cm 2 m |
| 9) 2000 m 3 km 2500 m | 10) 1781 m 1.8 km 1500 m |

I.O. # L-30 CONVERT BETWEEN THE VARIOUS STANDARD UNITS OF METRIC LENGTH.

MAKE THE FOLLOWING NUMBER SENTENCES OF LENGTH TRUE

- | | | |
|--------------------|------------------|-------------------|
| A) 1m = _____ km | 2m = _____ km | 1km = _____ m |
| B) 2km = _____ m | .5 km = _____ m | 1km = _____ hm |
| C) 2km = _____ hm | .5 km = _____ hm | 1dkm = _____ m |
| D) 2dkm = _____ m | .5 dkm = _____ m | 1dkm = _____ km |
| E) 1hm = _____ m | 2hm = _____ m | 1hm = _____ km |
| F) 1hm = _____ dam | .5 hm = _____ m | 3hm = _____ km |
| G) 5hm = _____ km | 10hm = _____ km | 10 km = _____ dam |
| H) 1m = _____ mm | 1m = _____ cm | 1m = _____ dm |
| I) 1mm = _____ m | 1cm = _____ m | 1dm = _____ m |
| J) 2dm = _____ m | 2m = _____ dm | 2m = _____ cm |
| K) 2cm = _____ mm | 1cm = _____ mm | 1m = _____ hm |
| L) 1m = _____ dam | 1m = _____ km | 500m = _____ km |
| M) 2km = _____ hm | 2km = _____ dam | 1dkm = _____ hm |
| N) 1dkm = _____ km | 1km = _____ m | 1m = _____ km |
| O) 1km = _____ hm | 1hm = _____ km | 1hm = _____ m |
| P) 1m = _____ hm | 1dm = _____ m | 1m = _____ dm |
| Q) 1cm = _____ dm | 1dm = _____ cm | 1mm = _____ m |
| R) 1m = _____ mm | 1m = _____ cm | 3m = _____ km |

METRIC AND DECIMALS

LOOK AT THE DECIMAL NUMERAL 6.817. YOU KNOW THAT 6 IS THE NUMBER OF ONES, 8 IS THE NUMBER OF TENTHS, 1 IS THE NUMBER OF HUNDREDTHS, AND 7 IS THE NUMBER OF THOUSANDTHS.

DECIMAL NUMERALS IN THE METRIC SYSTEM WORK THE SAME WAY. IF 6.817 IS A MEASUREMENT OF METERS, THEN 6 IS THE NUMBER OF METERS, 8 IS THE NUMBER OF TENTHS OF A METER OR DECIMETERS, 1 IS THE NUMBER OF HUNDREDTHS OF A METER OR CENTIMETERS, AND 7 IS THE NUMBER OF THOUSANDTHS OF A METER OR MILLIMETERS. 6.817 m is 6 m 8 dm 1 cm 7 mm.

6.	8	1	7
meters	decimeters	centimeters	millimeters

6.	8	1	7
ones	tenths	hundredths	thousandths

LINEAR UNITS OF MEASURE

KILO km	HECTO hm	DEKA dam	METER m	DECI dm	CENTI cm	MILLI mm
------------	-------------	-------------	------------	------------	-------------	-------------

5.489 METERS = 5 METERS 4 DECIMETERS 8 CENTIMETERS 9 MILLIMETERS

8.765 KILOMETERS = 8 KILOMETERS 7 HECTOMETERS 6 DEKAMETERS 5 METERS

FILL IN THE BLANK SPACES

3.648 m = _____ m _____ dm _____ cm _____ mm

6.403 km = _____ km _____ hm _____ dam _____ m

5.123 m = _____

3.007 m = _____

8.903 km = _____

_____ m = 3 m 4 dm 7 cm 6 mm

_____ km = 8 km 4 hm 6 dam 7 m

4.3 cm = _____ cm _____ mm

I.O. # L-32 PERFORM OPERATIONS WITH LIKE UNITS OF METRIC LENGTH.

SOLVE EACH PROBLEM

$$\begin{array}{r} 1) \quad 14.7\text{m} \\ 32.9\text{m} \\ 65.3\text{m} \\ \hline 2.5\text{m} \end{array}$$

$$\begin{array}{r} 2) \quad 127 \quad \text{km} \\ 96.0 \quad \text{km} \\ 208 \quad \text{km} \\ \hline 372.6 \quad \text{km} \end{array}$$

$$3) \quad 19\text{cm} + 8.4\text{cm} + 6.51\text{cm}$$

$$\begin{array}{r} 4) \quad 546\text{mm} \\ - 281\text{mm} \\ \hline \end{array}$$

$$\begin{array}{r} 5) \quad 76.3\text{cm} \\ - 18.9\text{cm} \\ \hline \end{array}$$

$$\begin{array}{r} 6) \quad 42\text{mm} \\ - 14.4\text{mm} \\ \hline \end{array}$$

$$\begin{array}{r} 7) \quad 35\text{m} \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8) \quad 16\text{km} \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 9) \quad 23.60\text{mm} \\ \times 7 \\ \hline \end{array}$$

$$10) \quad 5 \overline{) 75\text{cm}}$$

$$11) \quad 4 \overline{) 8.4 \text{ km}}$$

$$12) \quad 68\text{dm} \div 4$$

SOLVE THE FOLLOWING PROBLEMS:

1) <u>ADD</u> $\begin{array}{r} 5 \text{ cm} \quad 6 \text{ mm} \\ 8 \text{ cm} \quad 8 \text{ mm} \\ \hline \end{array}$	2) <u>ADD</u> $\begin{array}{r} 9 \text{ m} \quad 8 \text{ dm} \quad 7 \text{ cm} \\ 3 \text{ m} \quad 8 \text{ dm} \quad 6 \text{ cm} \\ 1 \text{ m} \quad 8 \text{ dm} \quad 4 \text{ cm} \\ \hline \end{array}$	3) <u>ADD</u> $\begin{array}{r} 7 \text{ km} \quad 8 \text{ hm} \quad 4 \text{ dam} \\ 9 \text{ km} \quad 3 \text{ hm} \quad 6 \text{ dam} \\ \hline \end{array}$
4) <u>SUBTRACT</u> $\begin{array}{r} 8 \text{ cm} \quad 9 \text{ mm} \\ 3 \text{ cm} \quad 5 \text{ mm} \\ \hline \end{array}$	5) <u>SUBTRACT</u> $\begin{array}{r} 7 \text{ m} \quad 2 \text{ dm} \\ 4 \text{ m} \quad 6 \text{ dm} \\ \hline \end{array}$	6) <u>SUBTRACT</u> $\begin{array}{r} 24 \text{ cm} \quad 7 \text{ mm} \\ 16 \text{ cm} \quad 9 \text{ mm} \\ \hline \end{array}$
7) $\begin{array}{r} 4 \text{ m} \quad 8 \text{ dm} \quad 9 \text{ cm} \\ \times \quad \quad \quad 3 \\ \hline \end{array}$	8) $\begin{array}{r} 17 \text{ cm} \quad 5 \text{ mm} \\ \times \quad \quad \quad 6 \\ \hline \end{array}$	9) $\begin{array}{r} 48 \text{ km} \quad 7 \text{ hm} \\ \times \quad \quad \quad 9 \\ \hline \end{array}$
10) $\begin{array}{r} 51 \text{ m} \quad 25 \text{ cm} \\ \times \quad \quad \quad 5 \\ \hline 26 \text{ m} \quad 25 \text{ cm} \end{array}$	11) $\begin{array}{r} 6 \text{ m} \quad 15 \text{ cm} \\ \times \quad \quad \quad 8 \\ \hline \end{array}$	12) $\begin{array}{r} 4) 6 \text{ m} \quad 8 \text{ dm} \\ \hline \end{array}$

SOLVE BY CHANGING EACH MEASUREMENT TO A DECIMAL IN ITS GREATEST METRIC UNIT.

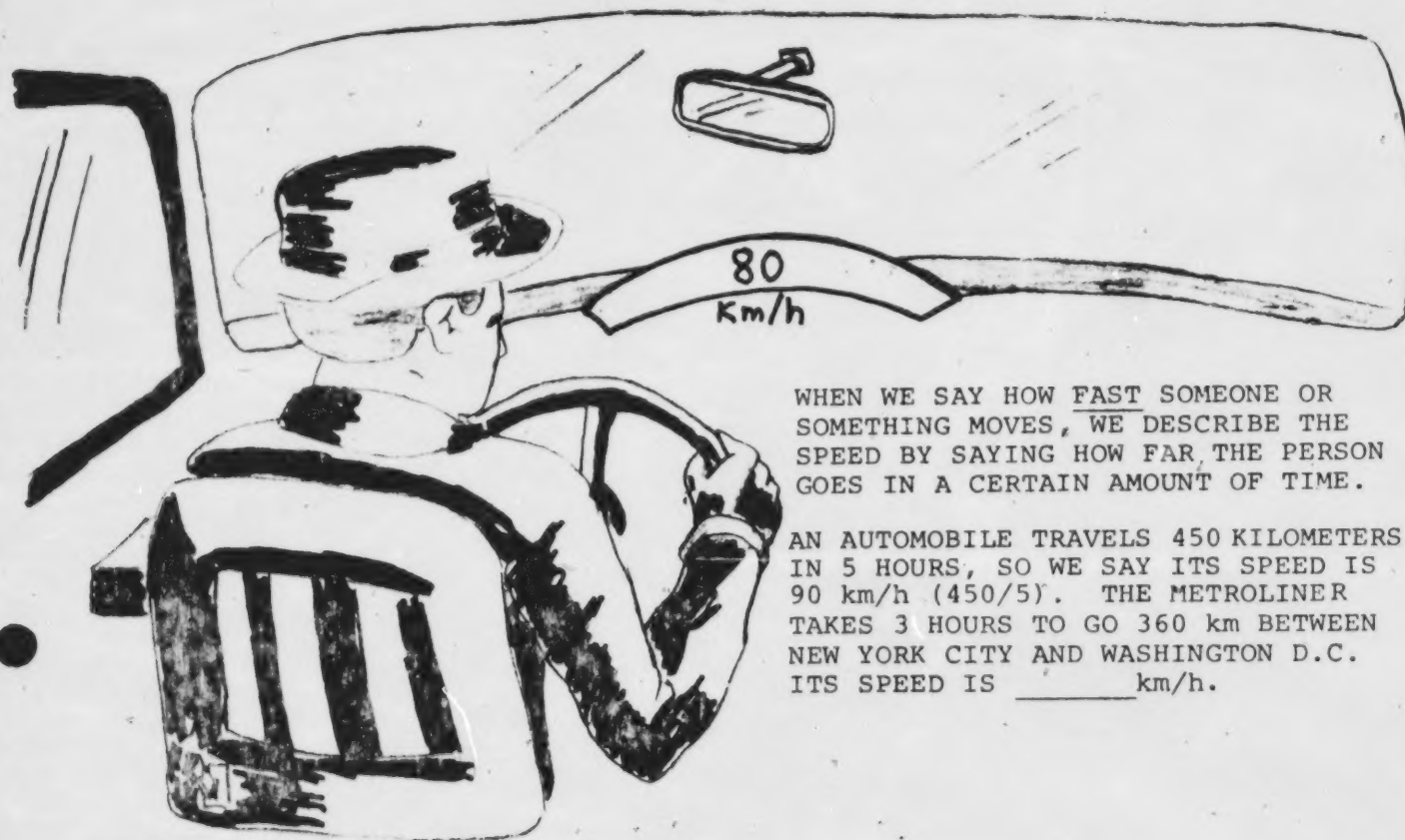
EXAMPLE 1

$$\begin{array}{r} \text{ADD} \quad 8 \text{ dm } 4 \text{ cm } 6 \text{ mm} = 8.46 \text{ dm} \\ + \quad 5 \text{ dm } 6 \text{ cm } 9 \text{ mm} = 5.69 \text{ dm} \\ \hline 14.15 \text{ dm} \end{array}$$

EXAMPLE 2

$$\begin{array}{r} \text{ADD} \quad 8 \text{ cm} = .08 \text{ m} \\ 9 \text{ dm} = .90 \text{ m} \\ 4 \text{ m} = 4.00 \text{ m} \\ 6 \text{ cm} = .06 \text{ m} \\ \hline 5.04 \text{ m} \end{array}$$

1) <u>ADD</u> $\begin{array}{r} 8 \text{ m } 5 \text{ dm } 4 \text{ cm} \\ 4 \text{ m } 7 \text{ dm } 6 \text{ cm} \\ \hline \end{array}$	2) <u>ADD</u> $\begin{array}{r} 3 \text{ m} \\ 6 \text{ dm} \\ 18 \text{ cm} \\ \hline \end{array}$	3) <u>ADD</u> $\begin{array}{r} 5 \text{ km } 6 \text{ hm } 7 \text{ dam} \\ 7 \text{ km } 9 \text{ hm } 7 \text{ dam} \\ 4 \text{ km } 9 \text{ hm } 6 \text{ dam} \\ \hline \end{array}$
4) <u>SUBTRACT</u> $\begin{array}{r} 8 \text{ m } 4 \text{ dm} \\ 2 \text{ m } 6 \text{ dm} \\ \hline \end{array}$	5) <u>SUBTRACT</u> $\begin{array}{r} 7 \text{ m } 1 \text{ dm } 3 \text{ cm} \\ 2 \text{ m } 6 \text{ dm } 8 \text{ cm} \\ \hline \end{array}$	6) <u>SUBTRACT</u> $\begin{array}{r} 4 \text{ cm} \\ 2 \text{ cm } 7 \text{ mm} \\ \hline \end{array}$
7) <u>ADD</u> $\begin{array}{r} 8 \text{ cm} \\ 4 \text{ dm} \\ 7 \text{ mm} \\ 6 \text{ mm} \\ 5 \text{ dm} \\ \hline \end{array}$	8) <u>ADD</u> $\begin{array}{r} 5 \text{ cm} \\ .6 \text{ m} \\ 7 \text{ dm} \\ 8 \text{ cm} \\ \hline \end{array}$	9) <u>ADD</u> $\begin{array}{r} 6 \text{ m } 2 \text{ cm } 4 \text{ mm} \\ 7 \text{ m } 3 \text{ dm } 8 \text{ mm} \\ \hline \end{array}$
10) <u>SUBTRACT</u> $45 \text{ cm} - 231 \text{ mm}$	11) <u>SUBTRACT</u> $5 \text{ m} - 236 \text{ cm}$	12) <u>SUBTRACT</u> $106 \text{ dam} - 1 \text{ km}$

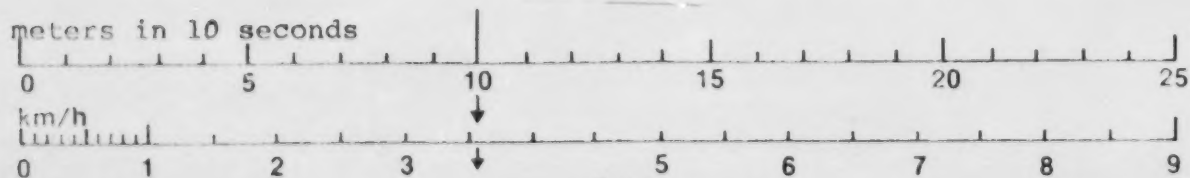


WHEN WE SAY HOW FAST SOMEONE OR SOMETHING MOVES, WE DESCRIBE THE SPEED BY SAYING HOW FAR THE PERSON GOES IN A CERTAIN AMOUNT OF TIME.

AN AUTOMOBILE TRAVELS 450 KILOMETERS IN 5 HOURS, SO WE SAY ITS SPEED IS 90 km/h ($450/5$). THE METROLINER TAKES 3 HOURS TO GO 360 km BETWEEN NEW YORK CITY AND WASHINGTON D.C. ITS SPEED IS _____ km/h.

FIND OUT HOW FAST YOU WALK. HERE'S HOW.

1. MARK A STARTING POINT.
2. HAVE A FRIEND WHO IS WATCHING A SECOND-HAND TELL YOU WHEN TO START, AND 10 SECONDS LATER WHEN TO STOP.
3. MEASURE HOW FAR YOU WALKED, _____ m IN 10 SECONDS.
4. ON THE TOP SCALE FIND THE NUMBER OF METERS YOU WALKED.
5. DRAW A LINE STRAIGHT DOWN TO THE BOTTOM SCALE. (THE EXAMPLE SHOWS A LINE FROM THE 10 m MARK. 10 m IN 10 SECONDS IS A SPEED OF 3.6 km/h.)
6. READ YOUR SPEED FROM YOUR LINE ON THE BOTTOM SCALE. _____ km/h



LINEAR MEASUREMENT

SOLVE THE FOLLOWING:

- 1) THE DISTANCE FROM PROSPECT PARK SCHOOL TO CONEY ISLAND IS 9 km.
HOW FAR DOES THE BUS TRAVEL IN MAKING ITS TWO ROUND TRIPS BETWEEN
THEM A DAY? _____
- 2) MRS. SMITH COMMUTES 32.4 KILOMETERS PER DAY. HOW MANY METERS
IS THIS? _____
- 3) THE THOMPSONS DROVE 240 km IN 3 HOURS. ON THE AVERAGE HOW
MANY KILOMETERS DID THEY DRIVE IN AN HOUR? _____
- 4) THE EDWARDS FAMILY TOOK A VACATION. THEIR SON MICHAEL KEPT
TRACK OF THE DISTANCES TRAVELLED. THEY WERE:

1st DAY	312 km	4th DAY	277 km
2nd DAY	285 km	5th DAY	292 km
3rd DAY	560 km	6th DAY	248 km

 - a. FIND THE TOTAL DISTANCE DRIVEN. _____
 - b. FIND THE AVERAGE DISTANCE COVERED PER DAY. _____
- 5) I BOUGHT 2 m OF RIBBON TO MAKE RIBBON AWARDS. IF I CUT 10
AWARDS, OF EQUAL SIZE AND USED ALL THE RIBBON, EACH RIBBON
AWARD WILL BE _____ m LONG OR _____ cm.
- 6) THE LENGTH OF A COMPACT CAR IS 4200 MILLIMETERS. HOW MANY
CENTIMETERS IS THIS? _____



- 7) IF 2.35 m OF CLOTH ARE REQUIRED FOR A DRESS, HOW MANY DRESSES COULD BE CUT FROM A 12 m PIECE? _____
- 8) IF A PIECE OF CLOTH 8.75 m LONG IS CUT FROM A PIECE 12 m LONG, HOW MUCH REMAINS? _____
- 9) TOM VISITS HIS GRANDMOTHER 6 km AWAY AND THEN GOES TO VISIT HIS AUNT 10 km AWAY. HOW FAR HAS HE WALKED? _____
- 10) IN THREE DAYS AN AIRPLANE FLEW 3286 km, 3078 km, AND 5000 km. HOW MANY KILOMETERS DID IT FLY IN THE THREE DAYS? _____
FIND THE AVERAGE KILOMETERS FLOWN PER DAY. _____
- 11) CAROL WAS 49 CENTIMETERS TALL AT BIRTH. AT AGE ONE, SHE WAS 70 CENTIMETERS TALL. HOW MANY CENTIMETERS DID SHE GROW? _____



- 12) WAYNE HAS A GOLDFISH THAT IS 5.1 cm LONG. MARK HAS A GOLDFISH THAT IS 43 mm LONG. WHOSE GOLDFISH IS LONGER? HOW MUCH LONGER?



- 13) IN A LUMBER YARD, THERE IS A STACK OF 60 SHEETS OF PLYWOOD. EACH IS 14 mm THICK. HOW HIGH IS THE STACK IN mm? _____ ? cm _____ ?
m _____ ?

HOW FAST

AIR

JET PLANE	900 km/h
DUCK HAWK	280 km/h
GOLDEN EAGLE	190 km/h
HUMMINGBIRD	97 km/h
FLY	8 km/h

WATER

DOLPHIN	40 km/h
MAN	7 km/h

LAND

TRAIN IN JAPAN	160 km/h
METROLINER	120 km/h
CHEETAH	110 km/h
ANTELOPE	100 km/h
AUTOMOBILE	90 km/h
JACK RABBIT	72 km/h
RACE HORSE	70 km/h
GREYHOUND	55 km/h
MAN ICE SKATING	45 km/h
MAN RUNNING	36 km/h
SNAKE	3 km/h

1. WHAT IS THE SPEED OF THE FASTEST ANIMAL NAMED? _____
2. WHAT IS THE SPEED OF THE SLOWEST ANIMAL NAMED? _____
3. WHAT IS THE DIFFERENCE IN SPEED BETWEEN THE FASTEST AND SLOWEST ANIMAL? _____
4. IF A HUMMINGBIRD TRAVELS AT FULL SPEED, HOW MANY HOURS WOULD IT TAKE TO TRAVEL 291 KILOMETERS? _____
5. IF THE ANTELOPE TRAVELS AT FULL SPEED, HOW MANY HOURS WOULD IT TAKE FOR IT TO TRAVEL 240 KILOMETERS? _____
6. HOW MANY MORE KILOMETERS PER HOUR CAN A HUMMINGBIRD TRAVEL THAN A RACE HORSE? _____
7. WHAT ANIMAL TRAVELS TWICE AS FAST AS A MAN CAN RUN? _____
8. A MAN CAN RUN HOW MANY TIMES AS FAST AS HE CAN SWIM? _____

FILL IN THE BLANKS:

1. WHAT WORD IS USED IN THE NAMES FOR ALL THE LINEAR UNITS? _____
2. WRITE THE SEVEN LINEAR UNITS IN ORDER FROM LONGEST TO SHORTEST _____
3. WRITE THE SYMBOL FOR EACH LINEAR UNIT. _____
4. WHICH THREE UNITS ARE LONGER THAN 1 METER? _____
5. WHICH THREE UNITS ARE SHORTER THAN 1 METER? _____
6. WHAT DOES CENTI-MEAN IN THE WORD CENTIMETER? _____
7. WHAT DOES KILO-MEAN IN THE WORD KILOMETER? _____

TRUE OR FALSE

8. MOST PEOPLE ARE ABOUT 4 METERS TALL. _____
9. ANY BOY OR GIRL CAN RUN 5 km IN 5 MINUTES. _____
10. YOUR WALKING STEP IS ABOUT 60 cm LONG. _____
11. CARS TRAVEL AT ABOUT 50 km PER HOUR ON CITY STREETS. _____

WHAT IS THE CORRECT LINEAR UNIT?

12. A NEW PENCIL IS ABOUT 2 _____ LONG.
13. A DIME IS ABOUT 1 _____ THICK.
14. YOUR SHOE IS ABOUT 20 _____ LONG.
15. YOU ARE ABOUT 140 _____ TALL.
16. A JET AIRPLANE MIGHT FLY ABOUT 8 _____ ABOVE THE GROUND.
17. A HOUSE MIGHT BE ABOUT 1 _____ HIGH.

18. A CAR MIGHT CRUISE AT ABOUT 80 _____ PER HOUR.
19. YOUR NAVEL IS ABOUT 90 _____ FROM THE GROUND.
20. A POSTAGE STAMP IS ABOUT 25 _____ WIDE.
21. A SMALL SWIMMING POOL MIGHT BE ABOUT 10 _____ LONG.
22. A HARD-HIT BASEBALL MIGHT TRAVEL 1 _____ .

CIRCLE THE CORRECT UNIT OF LENGTH IN EACH SENTENCE BELOW.

23. THE ROOM IS 4 (DECIMETERS, METERS) WIDE.
24. A BOTTLE OF MILK IS (2 DECIMETERS, METERS) HIGH.
25. THE DISTANCE FROM JOE'S HOUSE TO SCHOOL IS 4 (CENTIMETERS, KILOMETERS).
26. JANE'S FIRST BABY SHOES WERE 8 (CENTIMETERS, DECIMETERS) LONG.
27. THE BOOKSHELF IS 2 (CENTIMETERS, METERS) TALL.
28. MARK'S FATHER RUNS 2 (DECIMETERS, KILOMETERS) EVERY DAY.
29. RANDY NEEDS SOME NAILS THAT ARE ABOUT 7 (CENTIMETERS, METERS) LONG.
30. A FAST SWIMMER CAN SWIM 50 (METERS, KILOMETERS) IN ABOUT 1 MINUTE.

NAME _____ CLASS _____

METRIC TEST - LINEAR

I. Choose the best Linear Measure. Answer question in space at the right hand side of paper.

1. The basic unit of length in the metric system is
a) centimeter (cm), b) kilometer (km), c) Meter (m)
d) inch _____
2. Which is the largest unit of length? a) cm,
b) mm, c) M, d) dm _____
3. 1 meter = a) 12 cm, b) 10 cm, c) 100 cm,
d) 1000 cm _____
4. Which of the following statements are true? a) 1 dm
= 100 cm, b) 6 m is smaller than 30 dm, c) 15 mm
is larger than 1 m, d) 1 cm = 10 mm _____
5. Your height is closest to which of the following?
a) 62 cm, b) 100 cm, c) 160 cm, d) 250 cm _____
6. Your thumb length is closest to which of the
following? a) 2 cm, b) 5 cm, c) 20 cm, d) 50 cm _____
7. Which of the following is closest to 1 meter?
a) a tall adult, b) width of refrigerator, c) height
of refrigerator, d) the distance from your elbow to
your fingers _____
8. The height from the floor to the ceiling of your
classroom is closest to a) 3 meters, b) 20 meters,
c) 1000 mm, d) 7 meters _____
9. The distance from home plate to the outfield wall at
Shea Stadium is a) more than 1 km, b) about 1 km, c)
less than 1 Km _____
10. Which order goes from the largest unit to the smallest
unit? a) hm, dm, mm, cm b) km, dam, dm, m, c) km,
m, cm, mm, d) mm, km, m _____

II. Next to each object, choose the best unit of length that would be used to measure that object.

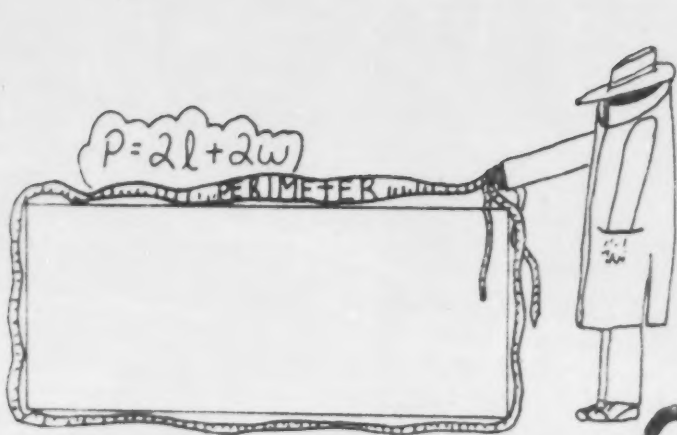
- | | | | | |
|-----------------------------------|-------|------|-------|-------|
| 11. Drinking glass | a) km | b) m | c) cm | d) mm |
| 12. Head of a pin | a) km | b) m | c) cm | d) mm |
| 13. Distance from N.Y. to Chicago | a) km | b) m | c) cm | d) mm |
| 14. Your waist | a) km | b) m | c) cm | d) mm |

III.

- | | | | | |
|--|--------------|------------------|-----------------|------------|
| 15. 24 m = | a) 240 cm | b) 2400 cm | c) 24000 cm | d) .24 m |
| 16. 45.6 = | a) 456 cm | b) 4560 cm | c) 4560 mm | d) 456 hm |
| 17. 7.24 m = | a) 724 mm | b) 724 dm | c) 7240 mm | d) 7240 cm |
| 18. 4.718 km = | a) 471.8 m | b) 4000 m | c) 4718 m | d) 47.18 m |
| 19. 15 mm = | a) 15000 m | b) .15 m | c) .015 m | d) 1.5 m |
| 20. 4 m 8 dm = | a) 48 m | b) 4.8 m | c) 4.8 dm | d) 48 cm |
| 21. 7 m 6 dm 3 cm = | a) 763 m | b) .763 m | c) 7.63 m | d) 76.3 m |
| 22. 5 km 4 hm 6 dam = | a) 546 km | b) 546 hm | c) 546 dam | d) 546 m |
| 23. 485 cm = | a) 48 m 5 cm | b) 4 m 8 dm 5 cm | c) 4m 8 cm 5 mm | d) .485 m |
| 24. The numeral 7 in the measurement 6.714 m is: | | | | |
| | a) m | b) dm | c) cm | d) mm |
| 25. Measure Line AB with your metric ruler. | | | | |

A _____ B $\overline{AB}$ is closest to :

a) 6 m	b) 6.4 cm	c) 4 cm 6 mm	d) 6 cm 7 mm
--------	-----------	--------------	--------------

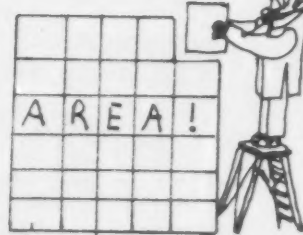


Starring
Lefty Longther
and
Millimeter House.

GEOMETRY

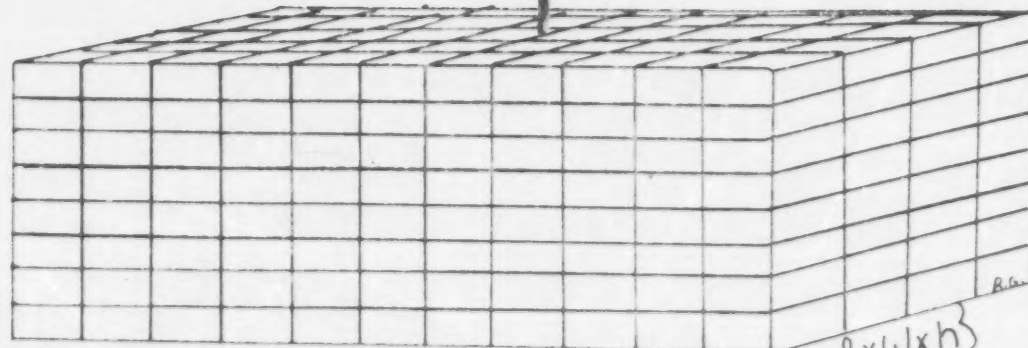
square centimeters

cm^2



$A = l \times w$

VOLUME



cm^3

cubic centimeters

$V = l \times w \times h$

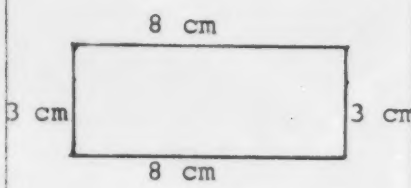
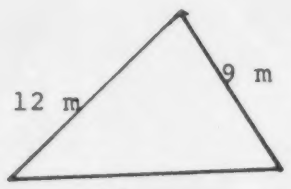
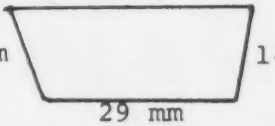
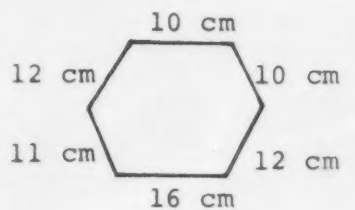
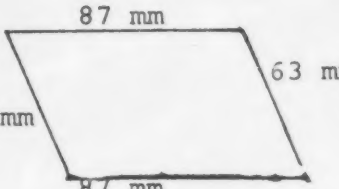
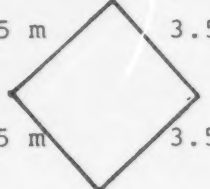
THE STUDENT WILL BE ABLE TO :

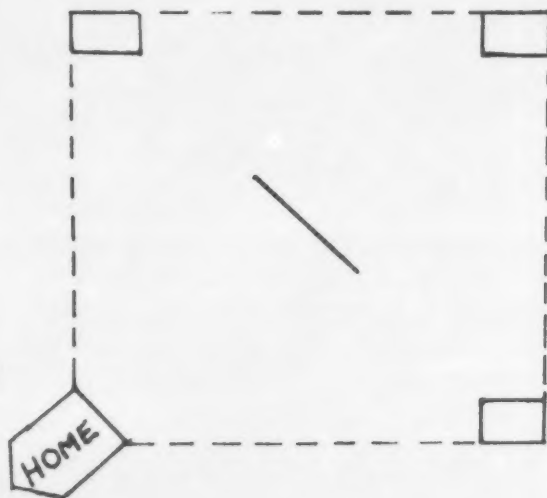
- G-1 FIND PERIMETER OF PLANE FIGURES WHOSE SIDES ARE MEASURED IN SIMILAR METRIC UNITS.
- G-2 EXPRESS PERIMETER OF PLANE FIGURES IN OTHER METRIC UNITS.
- G-3 RECOGNIZE AREA AS A MEASURE OF SQUARE UNITS.
- G-4 RECOGNIZE METRIC UNITS OF SQUARE MEASURE (AREA).
- G-5 EXPRESS THE RELATIONSHIP BETWEEN sq dm, sq cm, and sq mm .
- G-6 FIND AREA OF A RECTANGLE USING THE FORMULA, $\text{AREA} = \text{LENGTH} \times \text{WIDTH}$.
- G-7 SOLVE PROBLEMS THAT RELATE TO AREA OF A RECTANGLE
- G-8 IDENTIFY VOLUME AS THE SPACE OCCUPIED BY SOLID FIGURES.
- G-9 FIND VOLUME OF SOLID FIGURES USING THE COUNTING METHOD.
- G-10 FIND VOLUME OF SOLID FIGURES USING THE FORMULA, $V = L \times W \times H$
- G-11 SOLVE METRIC WORD PROBLEMS IN PERIMETER AND AREA.

THE FOLLOWING I.O.'s ARE ENRICHMENT WORK IN METRICS .

- G.E.-1 FIND AREA OF OTHER GEOMETRIC FIGURES USING THE COUNTING METHOD.
- G.E.-2 FIND AREA OF OTHER GEOMETRIC FIGURES USING FORMULA.
- G.E.-3 SOLVE PROBLEMS INVOLVING AREA OF TRIANGLES, CIRCLES, ETC.
USING METRIC MEASURES.
- G.E.-4 FIND VOLUME OF OTHER GEOMETRIC FIGURES USING FORMULA.
- G.E.-5 SOLVE WORD PROBLEMS INVOLVING VOLUME OF PRISMS AND CYLINDERS
USING METRIC MEASURES.

PICTURED BELOW ARE EXAMPLES OF THE POLYGON. A POLYGON IS A CLOSED FIGURE WHOSE SIDES ARE STRAIGHT LINE SEGMENTS. THE PERIMETER OF A POLYGON IS THE TOTAL DISTANCE AROUND THE FIGURE. FIND THE PERIMETER OF EACH POLYGON BY ADDING THE MEASURE OF ALL SIDES.

 1. _____	 2. _____	 3. _____
 4. _____	 5. _____	 6. _____



THE DISTANCE FROM ONE BASE TO THE NEXT BASE IS 27 METERS. HOW FAR WOULD REGGIE RUN IF HE HIT A HOME RUN?

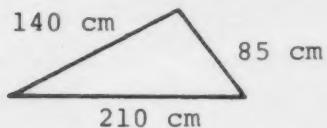
7. _____

REMINDER

TO ADD METRIC UNITS MAKE SURE EACH
MEASURE IS CHANGED TO SAME UNIT.

EXAMPLE

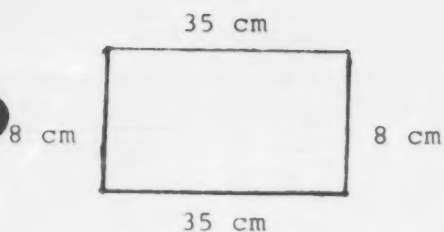
FIND PERIMETER IN m.

SOLUTION

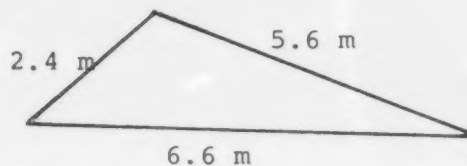
$$\begin{array}{r} 210 \text{ cm} \\ 140 \text{ cm} \\ 85 \text{ cm} \\ \hline P = 435 \text{ cm} \end{array}$$

$$435 \text{ cm} = 4.35 \text{ m.}$$

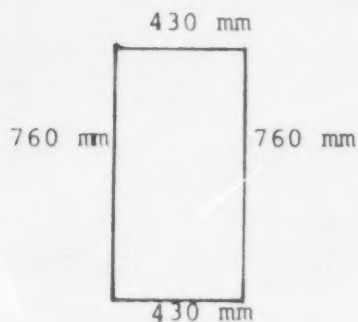
THE SUM OF THE 3 LENGTHS CHANGED TO
m IS 4.35 m.

FIND PERIMETER

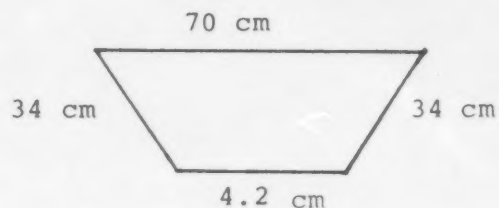
1. $P = \underline{\hspace{2cm}} \text{ dm}$



2. $P = \underline{\hspace{2cm}} \text{ cm}$



3. $P = \underline{\hspace{2cm}} \text{ cm}$

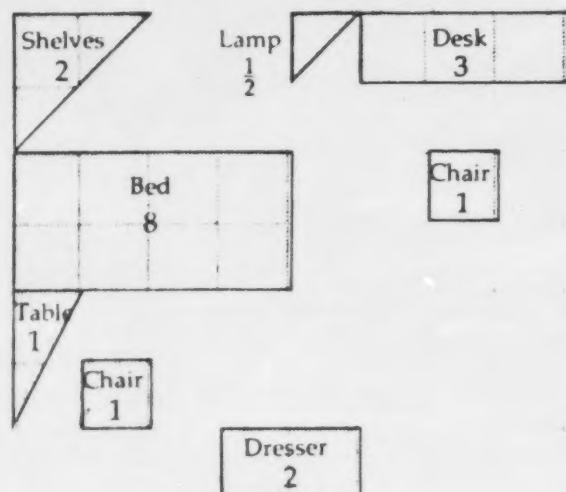


4. $P = \underline{\hspace{2cm}} \text{ m}$

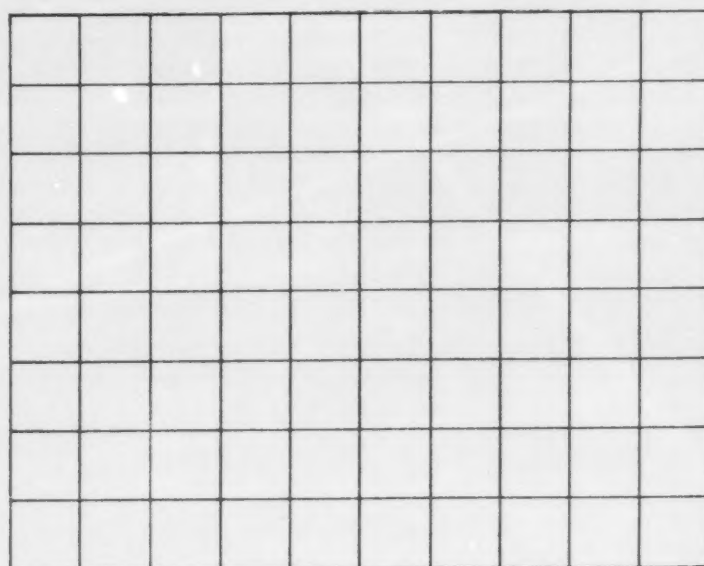
AREA IS THE MEASURE OF A SURFACE IN A REGION. WHEN YOU BUY CARPET YOU NEED TO KNOW THE AREA OF THE FLOOR. WHEN YOU BUY WALLPAPER YOU NEED TO KNOW THE AREA OF THE WALL. THERE ARE MANY AREAS, LARGE AND SMALL. A FARM MAY HAVE A LOT OF LAND AND, THEREFORE, A LARGE AREA. A FOOTBALL FIELD HAS A CERTAIN AREA. EVEN THE COVER OF A BOOK HAS AN AREA.

WHEN YOU MEASURE A LENGTH YOU USE A UNIT OF LENGTH, "SUCH AS THE METER" WHEN YOU MEASURE THE AREA OF A SURFACE YOU USE A UNIT OF AREA. IT IS CALLED A SQUARE UNIT.

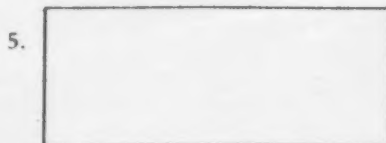
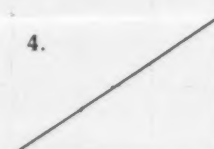
IF THIS SQUARE  HAS AN AREA OF 1 SQUARE UNIT, THE AREA OF EACH OBJECT IN THIS FLOOR PLAN IS AS SHOWN.



DRAW A RECTANGLE THAT COVERS THE SURFACE OF 24 OF THE SQUARE UNITS BELOW

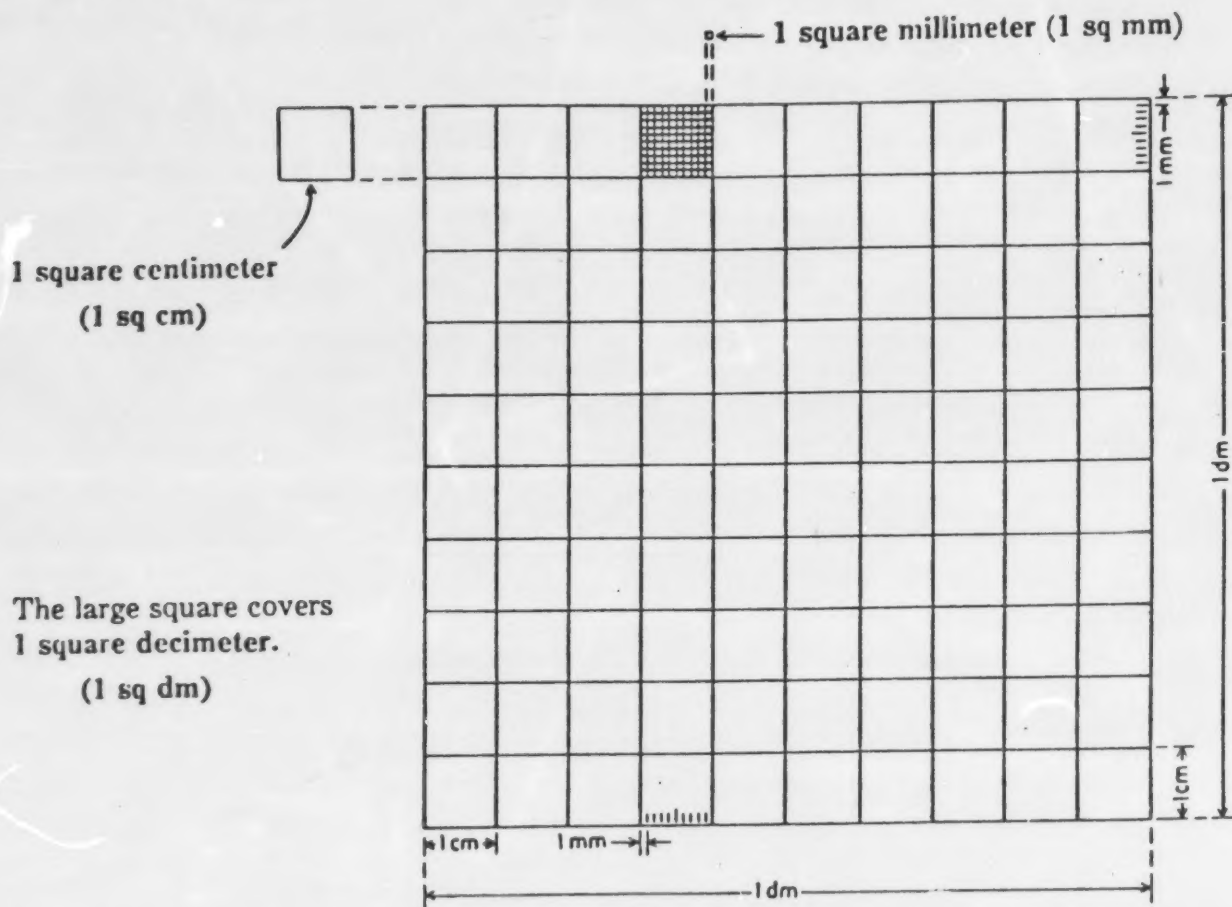


FIND THE AREA OF EACH OF THESE FIGURES.



- 1.O. # G-4 RECOGNIZE METRIC UNITS OF SQUARE MEASURE (AREA).
 G-5 EXPRESS THE RELATIONSHIP BETWEEN sq. dm, sq. cm, sq. mm

Metric Units of Area



The large square covers
 1 square decimeter.
 (1 sq dm)

1 SQUARE cm CAN BE WRITTEN AS 1 cm^2 .

HOW MANY SQUARE cm. ARE NEEDED TO COVER 1 SQUARE dm? _____

HOW MANY SQUARE mm. ARE NEEDED TO COVER 1 SQUARE cm? _____

HOW MANY SQUARE mm. ARE NEEDED TO COVER 1 SQUARE dm? _____

FILL IN THE BLANKS

1) 5 sq. dm = _____ cm^2

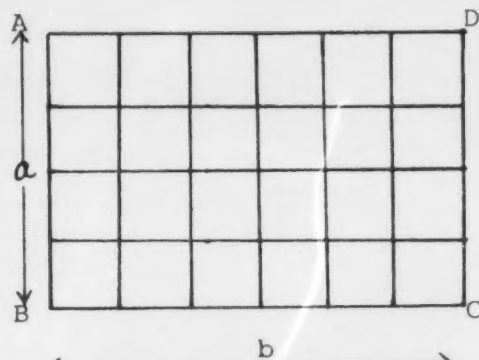
3) 3 dm^2 = _____ mm^2

2) 95 sq. cm = _____ SQ. mm

4) 1 sq. m = _____ sq. dm

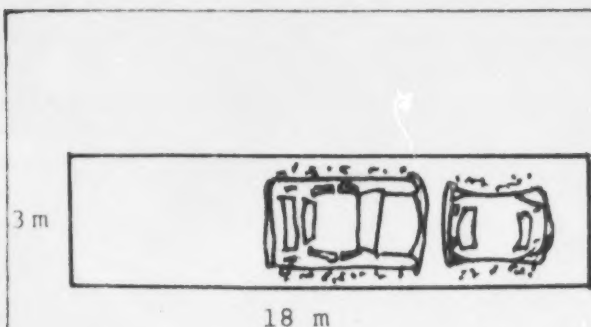
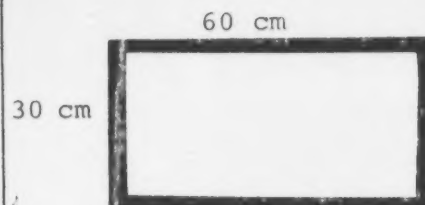
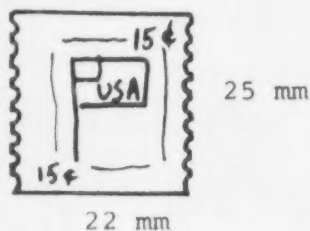
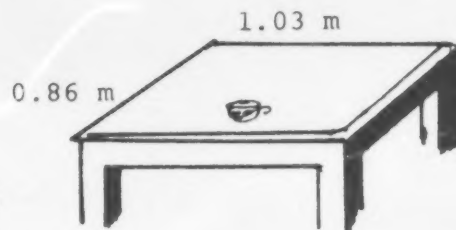
AREA OF A RECTANGLECOMPLETE THE FOLLOWING FOR
RECTANGLE ABCD.

1. HOW MANY ROWS OF SQ cm? _____
2. HOW MANY SQ cm IN EACH ROW? _____
3. HOW MANY SQ cm IN THE RECTANGLE? _____
4. HOW LONG IS SIDE AB? _____ cm
5. HOW LONG IS SIDE BC? _____ cm
6. $4 \times 6 =$ _____
7. WHAT IS THE AREA OF THE RECTANGLE? _____ cm^2

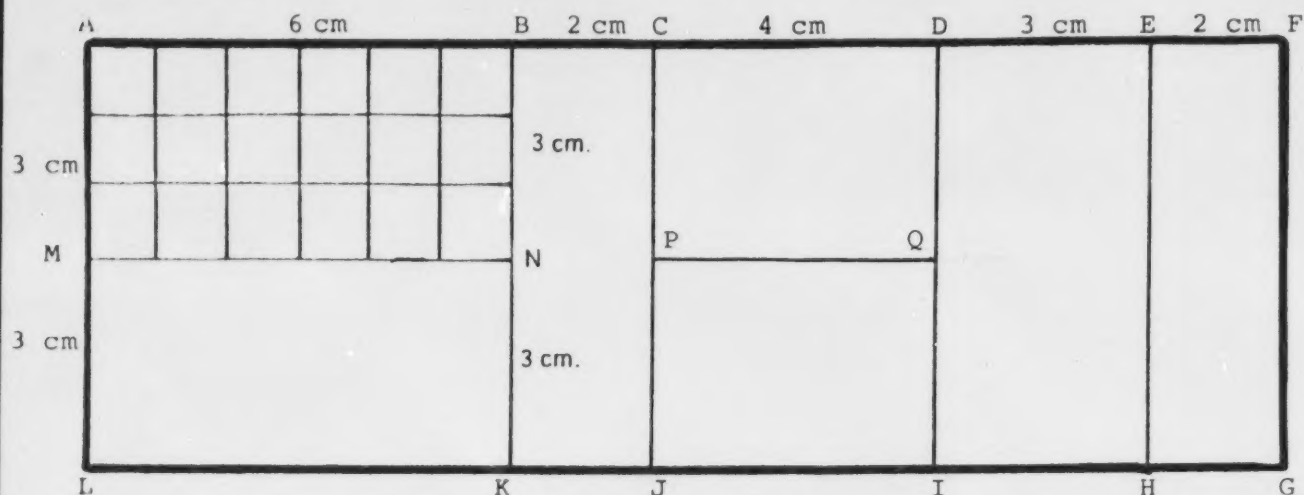


IF A RECTANGLE IS a UNITS
WIDE AND b UNITS LONG, ITS
AREA IS $a \times b$ SQUARE UNITS.

IN OTHER WORDS:
AREA = LENGTH $\times$ WIDTH.

FIND THE AREA OF EACH FIGURE BELOW:AREA OF THE DRIVEWAY _____ m^2 AREA OF THE BULLETIN BOARD: _____ cm^2 AREA OF THE POSTAGE STAMP _____ mm^2 AREA OF THE TABLE TOP _____ m^2

TO FIND THE AREA OF A RECTANGLE, MULTIPLY THE LENGTH BY THE WIDTH.



FIND THE AREA OF THE FOLLOWING:

1. FIND THE AREA OF THE FOLLOWING:

1. RECTANGLE ABNM = _____ sq. cm. MNKL = _____ sq. cm.
2. RECTANGLE ABKL = _____ sq. cm. BCJK = _____ sq. cm.
3. RECTANGLE ACJL = _____ sq. cm. CDIJ = _____ sq. cm.
4. RECTANGLE BDIK = _____ sq. cm. ADIL = _____ sq. cm.
5. RECTANGLE DEHI = _____ sq. cm. BEHK = _____ sq. cm.
6. RECTANGLE CEHJ = _____ sq. cm. CDPQ = _____ sq. cm.
7. RECTANGLE EFGH = _____ sq. cm. DFGI = _____ sq. cm.
8. RECTANGLE CFGJ = _____ sq. cm. BFGK = _____ sq. cm.
9. RECTANGLE AFGL = _____ sq. cm. AEHL = _____ sq. cm.
10. HOW CAN YOU FIND THE AREA OF A RECTANGLE WITHOUT COUNTING THE SQUARES? _____
11. THERE ARE 24 BOTTLES OF DRINKS IN A CASE. HOW MANY BOTTLES ARE IN SEVEN CASES? _____
12. JOAN'S GARDEN IS 6 METERS LONG AND 3 METERS WIDE. WHAT IS THE AREA OF HER GARDEN? _____
13. A CERTAIN ROOM IS 9 METERS WIDE AND 15 METERS LONG. WHAT IS THE AREA OF THE ROOM? _____

I.O.# G-8 -IDENTIFY VOLUME AS A MEASURE OF SOLID FIGURES.

I.O.# G-9 -FIND VOLUME OF SOLID FIGURES USING THE COUNTING METHOD.

PERIMETER - MEASURED IN LINEAR UNITS

AREA - MEASURED IN SQUARE UNITS

VOLUME - MEASURED IN CUBIC UNITS

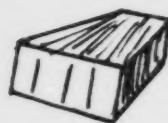
VOLUME



BOOK



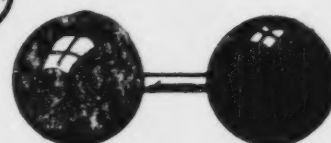
ROLLING PIN



BRICK



BALL

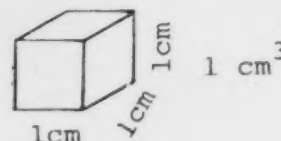


BARBELL

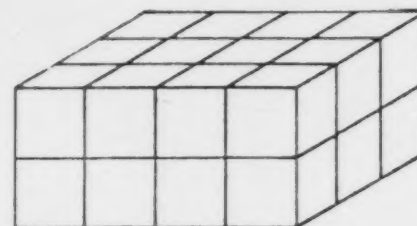
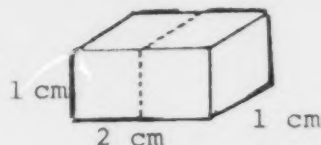
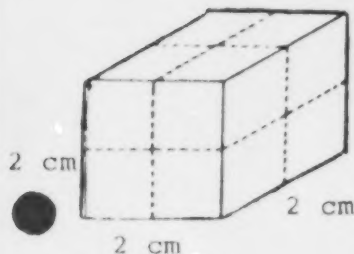
VOLUME IS THE AMOUNT OF SPACE AN OBJECT OCCUPIES. IT IS USUALLY MEASURED IN CUBIC CENTIMETERS. THAT IS, HOW MANY CUBIC CENTIMETERS THE OBJECT OCCUPIES. THE CUBIC CENTIMETER CAN BE EXPRESSED AS cc OR cm^3 .

THIS IS A CUBIC CENTIMETER.

- A. WHAT IS ITS LENGTH? _____ CENTIMETER
B. WHAT IS ITS WIDTH? _____ CENTIMETER
C. WHAT IS ITS HEIGHT? _____ CENTIMETER
D. WHAT IS ITS VOLUME? _____ CUBIC CENTIMETER

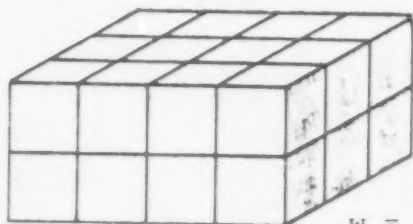


FIND THE VOLUME OF EACH FIGURE BELOW BY COUNTING THE NUMBER OF cm^3 THAT ARE CONTAINED IN THE FIGURE



WE HAVE ALREADY DETERMINED THAT THE VOLUME OF THIS FIGURE IS 24 cm^3 , BY THE COUNTING METHOD. A MORE PRACTICAL METHOD WOULD BE TO MULTIPLY THE LENGTH, WIDTH AND HEIGHT OF THIS RECTANGULAR PRISM.

h = 2 cm



w = 3 cm

l = 4 cm

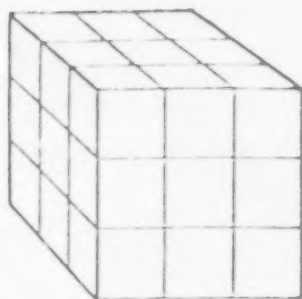
$$4 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = 24 \text{ cm}^3$$

OR

$$\text{VOLUME} = \text{LENGTH} \times \text{WIDTH} \times \text{HEIGHT}$$

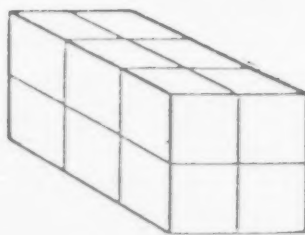
FIND THE VOLUME:

A.



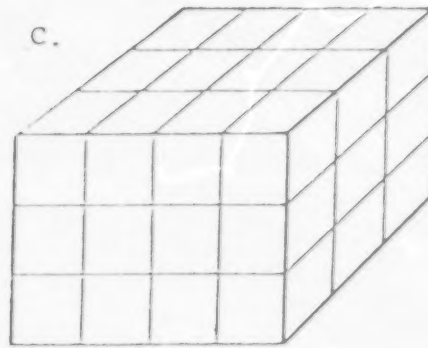
$$\begin{array}{r} \underline{\quad \times \quad \times \quad} = \underline{\quad} \\ V = \underline{\quad} \end{array}$$

B.



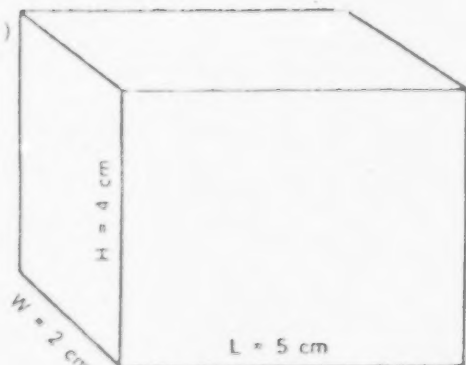
$$\begin{array}{r} \underline{\quad \times \quad \times \quad} = \underline{\quad} \\ V = \underline{\quad} \end{array}$$

C.



$$\begin{array}{r} \underline{\quad \times \quad \times \quad} = \underline{\quad} \\ V = \underline{\quad} \end{array}$$

D)



$$\begin{array}{r} \underline{\quad \times \quad \times \quad} = \underline{\quad} \\ V = \underline{\quad} \end{array}$$

E)

h	l	w	Volume
12 cm	4 cm	3 cm	cm^3
8 cm	6 cm	10 cm	
25 m	3 m	7 m	
11 km	4 km	11 km	
1 dm	1 dm	1 dm	
7 dm	4 dm	6 dm	

METRIC WORD PROBLEMS IN PERIMETER, AREA AND VOLUME

DETERMINE THE FACTS SOLVE THE PROBLEM

1. ARNOLD'S ROOM IS A 3m BY 4m RECTANGLE. HOW MANY SQUARE METERS OF TILE WOULD BE NEEDED TO COVER THE FLOOR OF THE ROOM?

_____ ANSWER

2. MR. LEVY'S PROPERTY NEEDS A NEW FENCE. THE PROPERTY IS 40 m BY 30m. HOW MANY METERS OF FENCING MUST HE ORDER?

_____ ANSWER

3. IF A CAN OF PAINT COVERS 400 cm^2 , HOW MUCH PAINT MUST GARY BUY TO PAINT A SQUARE WALL 1200 dm^2 ?

_____ ANSWER

4. A SUITCASE IS 90 CENTIMETERS LONG, 60 CENTIMETERS WIDE, AND 30 CENTIMETERS DEEP. HOW MANY CUBIC CENTIMETERS DOES IT HOLD?

_____ ANSWER

5. HOW MUCH CARPET WILL DOLORES BUY FOR HER RECTANGULAR ROOM 4.5m BY 6.4m?

_____ ANSWER

6. WHAT IS THE VOLUME OF A ROOM THAT IS 6 METERS LONG, 4 METERS WIDE, AND 5 METERS HIGH?

_____ ANSWER

7. ELLIOT'S ROOM IS A 4.3m BY 6.2m RECTANGLE. HOW MANY SQUARE METERS OF CARPET WILL HE NEED TO COVER THE FLOOR?

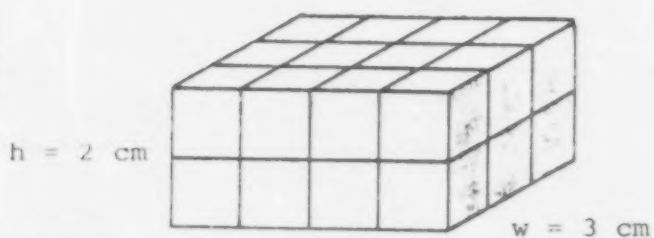
_____ ANSWER

8. MR. HERT'S YARD NEEDS A NEW HEDGE ROW. IF THE YARD IS 30m BY 20m, WHAT IS THE PERIMETER OF THE YARD?

_____ ANSWER

9. A BOX IS 25 CENTIMETERS WIDE AND 10 CENTIMETERS HIGH. HOW LONG IS THE BOX IF ITS VOLUME IS 2000 CUBIC CENTIMETERS?

_____ ANSWER



$$l = 4 \text{ cm}$$

$$4 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = 24 \text{ cm}^3$$

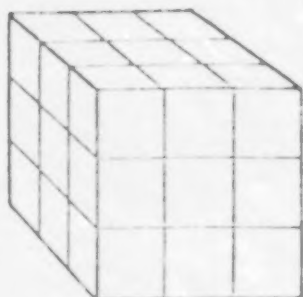
WE HAVE ALREADY DETERMINED THAT THE VOLUME OF THIS FIGURE IS 24 cm^3 , BY THE COUNTING METHOD. A MORE PRACTICAL METHOD WOULD BE TO MULTIPLY THE LENGTH, WIDTH AND HEIGHT OF THIS RECTANGULAR PRISM.

OR

$$\text{VOLUME} = \text{LENGTH} \times \text{WIDTH} \times \text{HEIGHT}$$

FIND THE VOLUME:

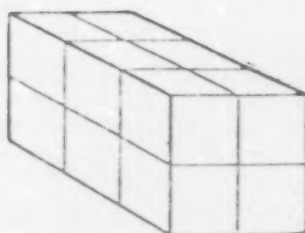
A.



$$\underline{\quad \times \quad \times \quad = \quad}$$

$$V = \underline{\quad}$$

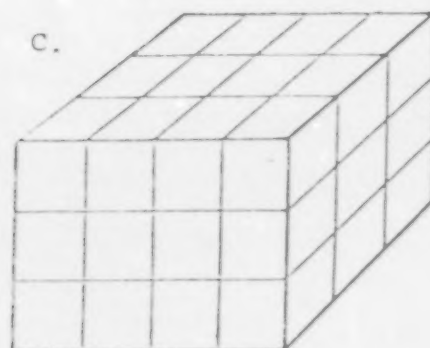
B.



$$\underline{\quad \times \quad \times \quad = \quad}$$

$$V = \underline{\quad}$$

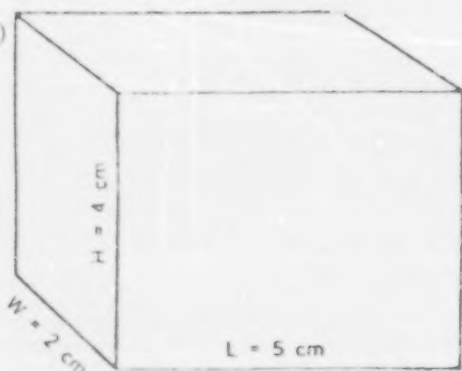
C.



$$\underline{\quad \times \quad \times \quad = \quad}$$

$$V = \underline{\quad}$$

D)



$$\underline{\quad \times \quad \times \quad = \quad}$$

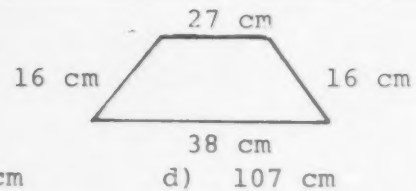
$$V = \underline{\quad}$$

E)

h	l	w	Volume
12 cm	4 cm	3 cm	cm^3
8 cm	6 cm	10 cm	
25 m	3 m	7 m	
11 km	4 km	11 km	
1 dm	1 dm	1 dm	
7 dm	4 dm	6 dm	

GEOMETRY TEST

- 1) The perimeter of this trapezoid is:

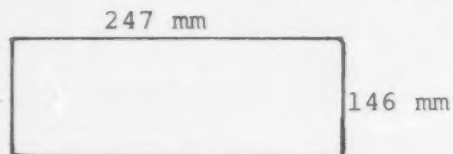


- a) 97 cm b) 95 cm c) 98 cm d) 107 cm

- 2) The perimeter of a triangle whose sides are 7 m, 7.5 m and 6.7 m is

- a) 20.12 m b) 21.2 m c) 2.12 m d) none of these

- 3) Express the perimeter of the rectangle below in centimeters.

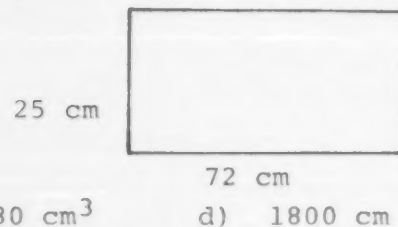


- a) 39.3 cm b) 786 cm c) 7.86 cm d) 78.6 cm

- 4) The area of a driveway could be.

- a) 5 sq cm b) 50 m² c) 40 sq mm d) 100 meters

- 5) Find the area of the following figure:



- a) 180 cm² b) 1800 cm² c) 180 cm³ d) 1800 cm

- 6) Jerry must tile a floor 18 cm by 20 dm. Each tile costs 30¢. If each tile is 1 sq dm, how much would it cost to tile that floor?

- a) \$50.00 b) \$108.00 c) \$10.80 d) \$75.00

- 7) Which of the following objects would not be measured in cubic units?

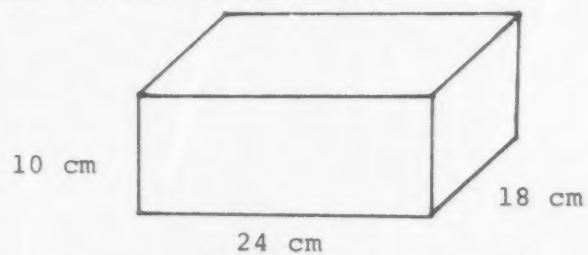
- a) brick b) auto engine c) house d) top of a desk

- 8) The number of cc's in the following figure is:



- a) 8 cc b) 12 cc c) 16 cc d) none of these

9) Find the volume of the carton below:



- a) 432 cm^3 b) 332 cm^3 c) 4320 cm^3 d) 52 cm^3

10) 1 cubic meter is equivalent to:

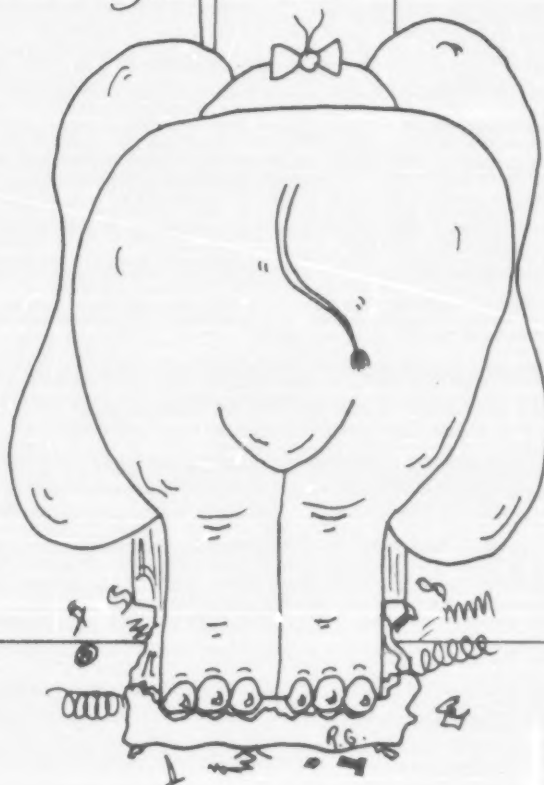
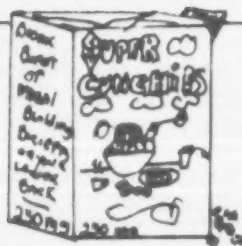
- a) 100 cu dm b) 1000 cu dm c) 10,000 cu dm d) 10 cu dm

Weight Gain

Milligrams

Tons

Kilograms



MASS

THE STUDENT WILL BE ABLE TO :

- W-1 UNDERSTAND THE DIFFERENCE BETWEEN WEIGHT AND MASS.
- W-2 IDENTIFY THE GRAM AS A STANDARD UNIT OF WEIGHT.
- W-3 RECOGNIZE WEIGHTS IN TERMS OF THE GRAM.
- W-4 ESTIMATE THE WEIGHT OF OBJECTS IN TERMS OF THE GRAM
- W-5 WEIGH OBJECTS IN TERMS OF THE GRAM.
- W-6 EXPRESS THE RELATIONSHIP BETWEEN THE GRAM AND THE KILOGRAM.
- W-7 RECOGNIZE THE KILOGRAM AS A STANDARD UNIT OF WEIGHT.
- W-8 ESTIMATE THE WEIGHT OF OBJECTS IN TERMS OF THE KILOGRAM.
- W-9 WEIGH OBJECTS IN TERMS OF THE KILOGRAM.
- W-10 EXPRESS THE RELATIONSHIP BETWEEN THE GRAM AND THE MILLIGRAM.
- W-11 RECOGNIZE THE MILLIGRAM AS A STANDARD UNIT OF WEIGHT.
- W-12 CHOOSE A REASONABLE UNIT OF WEIGHT FOR DIFFERENT OBJECTS.
- W-13 CONVERT WITHIN MILLIGRAMS, GRAMS AND KILOGRAMS.
- W-14 RECOGNIZE THE METRIC TON (MEGAGRAM)
- W-15 CONVERT WITHIN ALL METRIC UNITS OF WEIGHT.
- W-16 PERFORM OPERATIONS WITH METRIC UNITS OF WEIGHT.
- W-17 SOLVE VERBAL PROBLEMS THAT INVOLVE METRIC UNITS OF WEIGHT.
- W-18 UNDERSTAND WEIGHT IN THE METRIC SYSTEM.

Mass and Weight



YOU ARE AN ASTRONAUT. WEIGH YOURSELF IN KILOGRAMS AND COMPLETE THE INFORMATION AS IN THE CARTOONS.

EARTH

mass _____

scale reads _____

SPACE

mass _____

scale reads _____

MOON

mass _____

scale reads _____

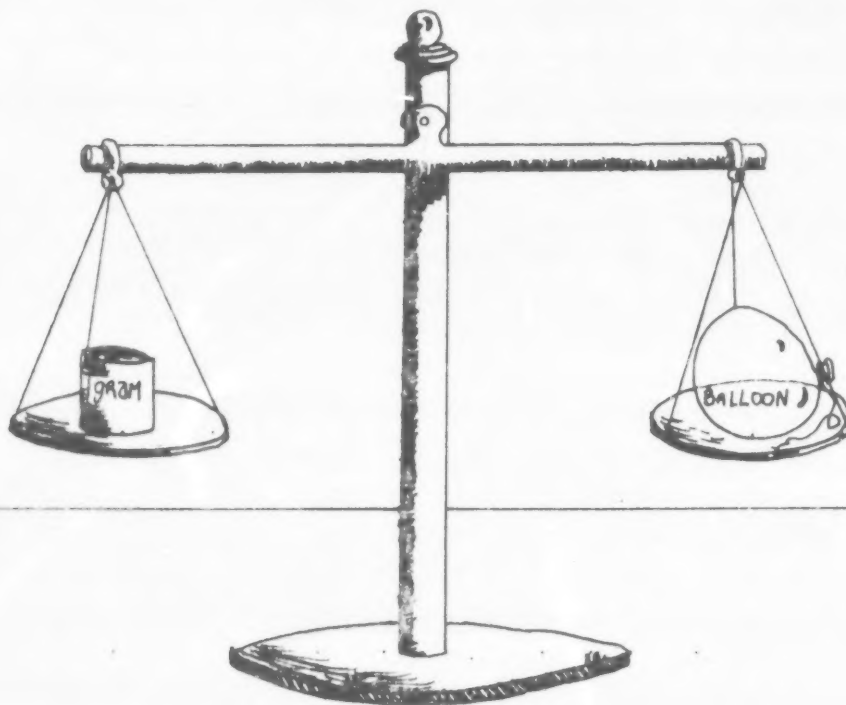
Divide your earth weight by 6 to find your moon weight.



I.O. # W-2 IDENTIFY THE GRAM AS A STANDARD UNIT OF WEIGHT.

W-3 RECOGNIZE WEIGHTS IN TERMS OF THE GRAM.

IN THE METRIC SYSTEM, WEIGHT IS MEASURED IN GRAMS. THE GRAM (g) IS A VERY SMALL UNIT OF WEIGHT. THE DIAGRAMS BELOW WILL HELP YOU IDENTIFY THE GRAM AS A STANDARD UNIT FOR MEASURING WEIGHT.



TO FURTHER APPRECIATE THIS, PLACE A THUMB TACK OR THREE ASPIRIN TABLETS IN YOUR HAND. YOU NOW HAVE THE WEIGHT OF APPROXIMATELY 1 GRAM.

2 paper clips



weigh about 1 gram

1 teaspoon of water



weighs about 5 grams

1 nickel



weighs about 5 grams

1 thumbtack



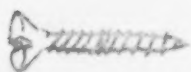
weighs about 1 gram

HOW MANY ITEMS ARE NEEDED TO BALANCE 1 GRAM?

PINS



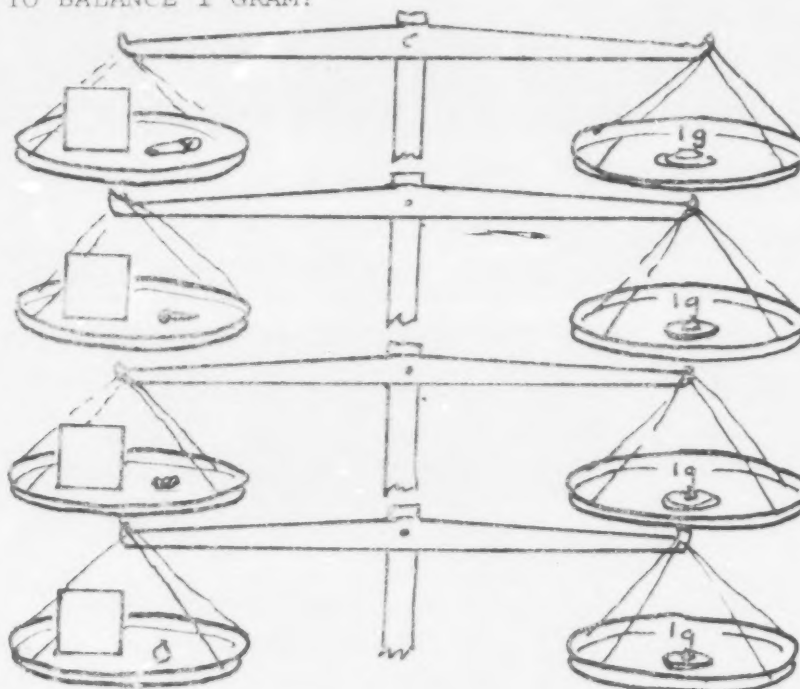
SCREWS



RAISINS



DROPS OF WATER

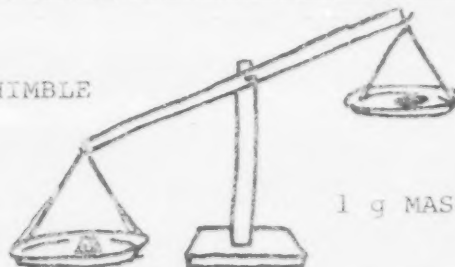


DROP OF WATER



1 g MASS

THIMBLE



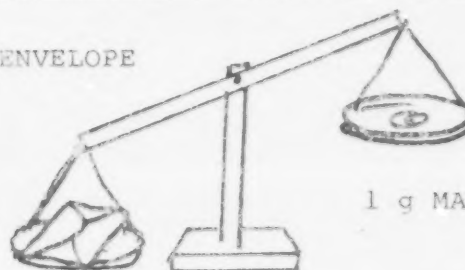
1 g MASS

POSTAGE
STAMP



1 g MASS

ENVELOPE

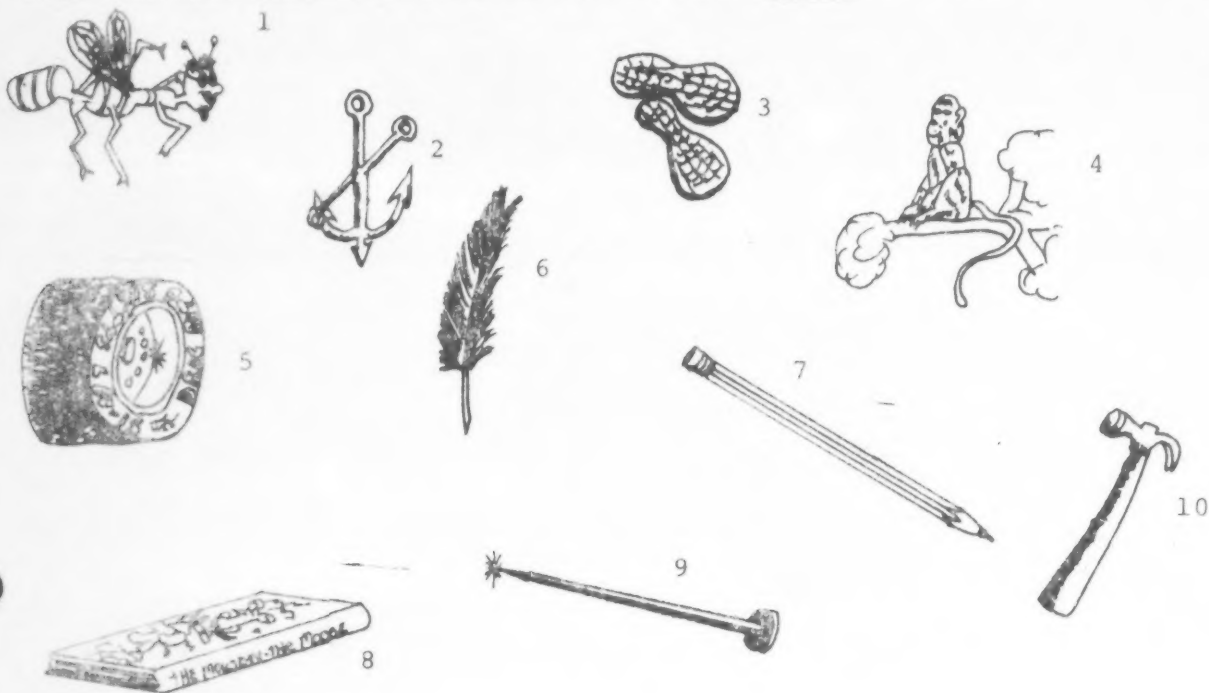


1 g MASS

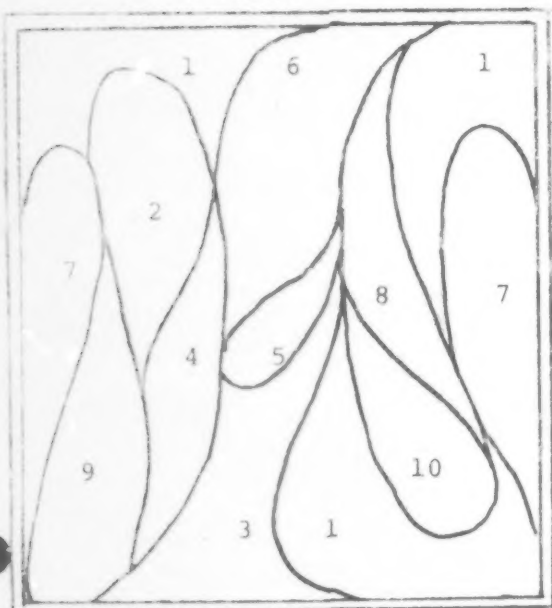
LIST THE FOLLOWING IN ORDER FROM LIGHTEST TO HEAVIEST.

- | | |
|----------------------|-------------------------|
| A) 8 RAISINS | E) 1 POSTAGE STAMP |
| B) 3 PINS | F) 1 NICKEL |
| C) 16 DROPS OF WATER | G) 2 THUMB TACKS |
| D) 3 SCREWS | H) 2 TEASPOONS OF WATER |

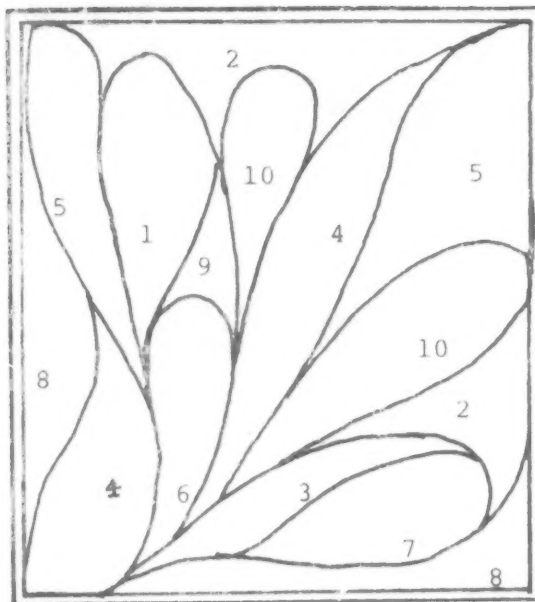
- | | |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ | 7. _____ |
| 4. _____ | 8. _____ |

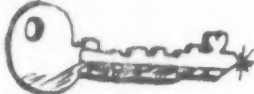
DIRECTIONS:SHADE IN THE AREA ON PUZZLE I FOR OBJECTS OVER 10 GRAMS.SHADE IN THE AREA ON PUZZLE II FOR OBJECTS UNDER 10 GRAMS.

PUZZLE I



PUZZLE II



OBJECT	ESTIMATE IN GRAMS	ACTUAL WEIGHT IN GRAMS
1) a shoe 	_____ g	_____ g
2) a pencil 	_____ g	_____ g
3) a book 	_____ g	_____ g
4) a key 	_____ g	_____ g
5) an eraser 	_____ g	_____ g
6) a ring 	_____ g	_____ g
7) chalk	_____ g	_____ g
8) a quarter	_____ g	_____ g
9) a ball	_____ g	_____ g
10) eyeglasses	_____ g	_____ g
11) a ruler	_____ g	_____ g
12) scotch tape	_____ g	_____ g
13) _____	_____ g	_____ g
14) _____	_____ g	_____ g



1000 GRAM = 1 KILOGRAM ABBREVIATION FOR KILOGRAM IS kg

FILL IN THE BLANKS

1. 1000 g = 1 kg

2. 900 g = .9 _____

3. 800 g = _____ kg

4. 700 g = _____ kg

5. _____ g = .6 kg

6. _____ g = .5 kg

7. _____ g = .4 kg

8. 300 g = _____ kg

9. 200 g = _____ kg

10. _____ g = .1 kg

11. 90 g = .09 kg

12. _____ g = .08 kg

13. 70 g = _____ kg

14. 60 g = _____ kg

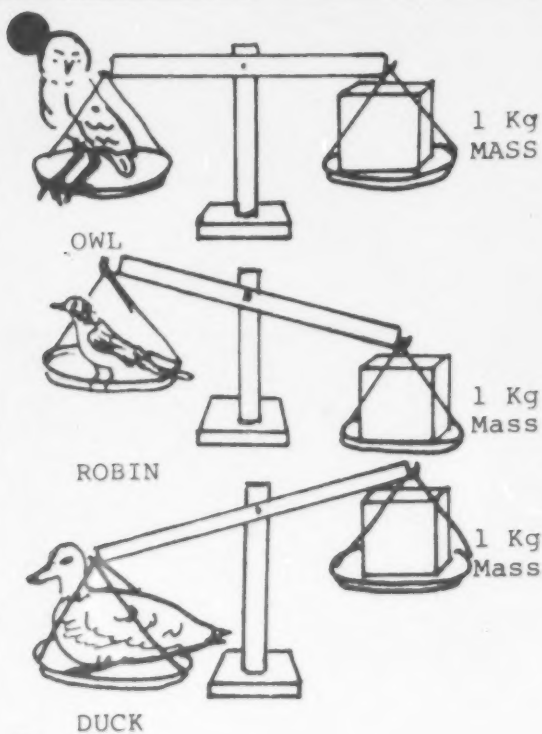
15. 50 g = _____ kg

16. 40 g = _____ kg

17. 30 g = _____ kg

18. _____ g = .02 kg

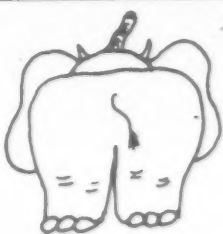
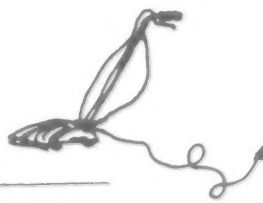
19. 10 g = _____ kg



NAME 3 OTHER OBJECTS THAT WEIGH APPROXIMATELY 1 KILOGRAM.

1. _____
2. _____
3. _____

TELL IF EACH OBJECT WEIGHS MORE THAN 1 KILOGRAM OR LESS THAN 1 KILOGRAM

 MORE _____ LESS _____	 MORE _____ LESS _____	 MORE _____ LESS _____
 MORE _____ LESS _____	 MORE _____ LESS _____	 MORE _____ LESS _____

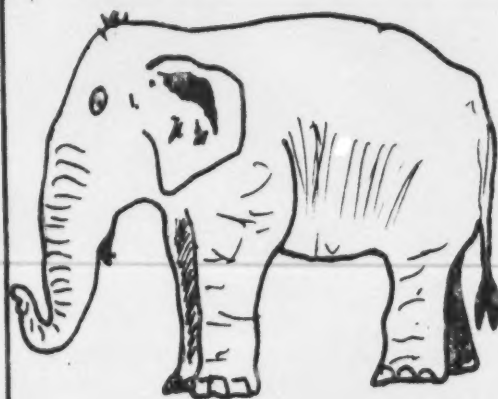
KILOGRAMS

250	WEIGHT OF A MOTORCYCLE
91	WEIGHT OF A BOXER
80	WEIGHT OF A SLIM MAN
60	WEIGHT OF A SLIM WOMAN
41	WEIGHT OF A JOCKEY
27	WEIGHT OF A BOXER DOG
10	WEIGHT OF A TURKEY
4	WEIGHT OF A CAT

CIRCLE THE BEST APPROXIMATE WEIGHT IN KILOGRAMS FOR EACH OBJECT BELOW.



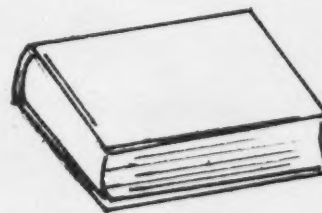
1 kg 7 kg 20 kg



500 kg 2000 kg 20,000 kg



20 kg 100 kg 400 kg

400 kg 1,000 kg
2,000 kg

1 kg 3 kg 5 kg



1 kg 7 kg 30 kg



100 kg 97 250 kg 500 kg

- I.O. # W-8 ESTIMATE THE WEIGHT OF OBJECTS IN TERMS OF THE KILOGRAM.
W-9 WEIGH OBJECTS IN TERMS OF THE KILOGRAM.



A BUNCH OF BANANAS:
ABOUT 2 kg

LIST 5 OBJECTS FOUND
IN YOUR CLASSROOM
THAT CAN BE WEIGHED
USING EITHER TYPE
OF SCALE. PLACE THEM
IN ORDER FROM LIGHTEST
TO HEAVIEST.



AN 11 YEAR OLD:
ABOUT 45 kg

ESTIMATE THE WEIGHT OF EACH ITEM MENTIONED BELOW. THEN FIND THE ACTUAL WEIGHT.

ITEM	ESTIMATE	ACTUAL WEIGHT
1 TEXTBOOK		
5 TEXTBOOKS		
WASTE BASKET		
CHAIR		
TEACHER		
ANY MALE STUDENT		
ANY FEMALE STUDENT		
CHOOSE ANY 3 ITEMS FROM YOUR LIST ABOVE		
1)		
2)		
3)		

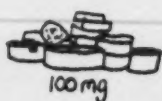
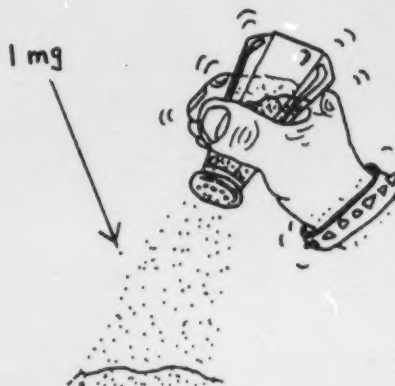
I.O. # W-10 EXPRESS THE RELATIONSHIP BETWEEN THE GRAM AND THE MILLIGRAM.

I.O. # W-11 RECOGNIZE THE MILLIGRAM AS A STANDARD UNIT OF WEIGHT.

ONE GRAIN OF SALT WEIGHS ABOUT 1
MILLIGRAM. IT TAKES 1000 MILLIGRAMS
(mg) TO MAKE ONE GRAM. $1000 \text{ mg} = 1 \text{ g}$.

YOU WILL NOT SEE OR USE THESE UNITS
OF MEASUREMENT VERY OFTEN BECAUSE
THEY ARE SO SMALL. TO FURTHER
APPRECIATE THIS, PLACE A THUMB TACK
OR THREE ASPIRIN TABLETS IN YOUR HAND.
YOU NOW HAVE THE WEIGHT OF APPROXI-
MATELY 1 GRAM OR 1000 MILLIGRAMS.

THE WEIGHT OF MEDICINE AND VITAMINS
ARE EXAMPLES OF OBJECTS THAT ARE
VERY LIGHT. THEY ARE USUALLY MEASURED IN MILLIGRAMS.



NAME 4 OBJECTS IN YOUR HOME THAT
WOULD BE WEIGHED IN MILLIGRAMS.

Billy Martin	
Patient's Name	
10/13/78	51
Date of Visit	Age
Amaxicillin 100ml	
125 mg/5ml	
Rx 608 421	
Signature	Major [Signature] M.D.

FILL IN THE BLANKS

1) $1000 \text{ mg} = \underline{1} \text{ g}$

2) $900 \text{ mg} = \underline{.9} \text{ g}$

3) $800 \text{ mg} = \underline{\quad} \text{ g}$

4) $700 \text{ mg} = \underline{\quad} \text{ g}$

5) $\underline{\quad} \text{ mg} = .6 \text{ g}$

6) $\underline{\quad} \text{ mg} = .5 \text{ g}$

7) $\underline{\quad} \text{ mg} = .4 \text{ g}$

8) $300 \text{ mg} = \underline{\quad} \text{ g}$

9) $200 \text{ mg} = \underline{\quad} \text{ g}$

10) $\underline{\quad} \text{ mg} = .1 \text{ g}$

kilograms grams milligrams

FILL IN THE CORRECT UNITS TO MAKE EACH SENTENCE REASONABLE. CHOOSE FROM THESE UNITS: KILOGRAM, GRAM, MILLIGRAM.

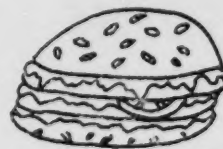
- 1) A PIECE OF PAPER 22 cm WIDE x 28 cm LONG WEIGHS ABOUT 1 _____.
- 2) A PROFESSIONAL FOOTBALL PLAYER WEIGHS ABOUT 110 _____.
- 3) EACH OF MY VITAMIN PILLS WEIGHS 1125 _____.
- 4) A BANANA MIGHT WEIGH ABOUT 150 _____.
- 5) A DIME WEIGHS ABOUT 2 _____.
- 6) A PAPER CLIP WEIGHS ABOUT 1 _____.
- 7) MY CAR WEIGHS 1456 _____.
- 8) THE RECIPE SAID TO ADD 4 _____ OF SALT.
- 9) MY TENNIS RACKET WEIGHS 350 _____.
- 10) ONE PLAYING CARD WEIGHS ABOUT 950 _____.
- 11) THE CAN OF BEANS WEIGHS 454 _____.
- 12) ONE STRAND OF HAIR WEIGHS 2 _____.
- 13) I BOUGHT 4 _____ OF POTATOES AT THE STORE.
- 14) ONE STAPLE WEIGHS ABOUT 330 _____.



MY FOOTBALL WEIGHS
400 _____



THIS BABY WEIGHS
3 _____



THIS HAMBURGER WEIGHS
250 _____



MY SNEAKER WEIGHS
300 _____



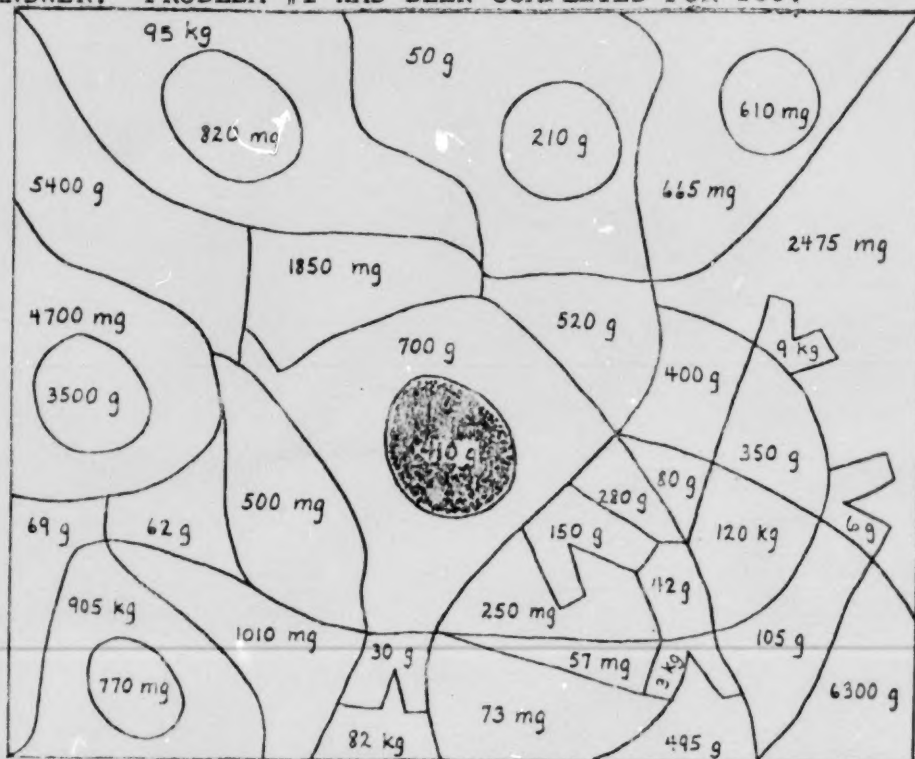
ONE OF THESE PILLS
WEIGHS 500 _____



THIS TV WEIGHS 25 _____

kilograms grams milligrams

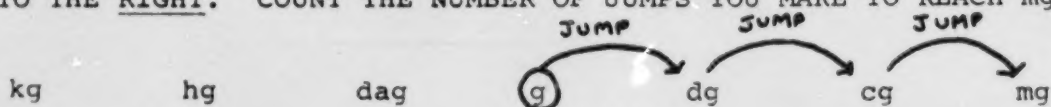
FOUND BELOW ARE 16 EXERCISES THAT REQUIRE YOU TO CHOOSE THE MOST REASONABLE UNIT OF WEIGHT. SOLVE EACH PROBLEM AND THEN SHADE EACH AREA WHICH CONTAINS A CORRECT ANSWER. PROBLEM #1 HAS BEEN COMPLETED FOR YOU.



1. A CAN OF POP MIGHT WEIGH  41 g 410 g 4100 g	3. A TENNIS RACKET MIGHT WEIGH  350 mg 350 g 350 kg
2. A NEWBORN BABY WEIGHS ABOUT  3 kg 30 kg 300 kg	4. THE DOCTOR GAVE ME A PILL THAT WEIGHED  250 g 250 kg 250 mg

kg KILO	hg hecto	dag deka	g GRAM	dg deci	cg centi	mg MILLI
------------	-------------	-------------	-----------	------------	-------------	-------------

TO CONVERT FROM GRAMS (g) TO MILLIGRAMS (mg) YOU START AT g AND
MOVE TO THE RIGHT. COUNT THE NUMBER OF JUMPS YOU MAKE TO REACH mg.



YOU MOVED 3 JUMPS TO THE right SO MOVE THE DECIMAL POINT 3
PLACES TO THE right .

Example: $4.675 \text{ g} = \text{mg}$

4.675 therefore, 4.675 g = 4675 mg

MOST OF THE TIME YOU WILL BE USING ONLY kg, g, AND mg. TO CONVERT FROM GRAMS (g) TO KILOGRAMS (kg) YOU START AT g AND MOVE TO THE LEFT.

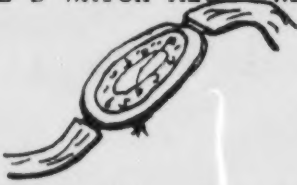
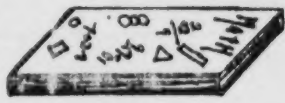
YOU MOVED 3 JUMPS TO THE LEFT SO MOVE THE DECIMAL POINT 3
PLACES TO THE LEFT

Example: 67 g = kg

• 67. therefore 67 g = .067 kg

- 1) 5.235 g = _____ mg..... (_____ jumps to the _____)
- 2) 639 mg = _____ g (_____ jumps to the _____)
- 3) 4 kg = _____ g.....(_____ jumps to the _____)

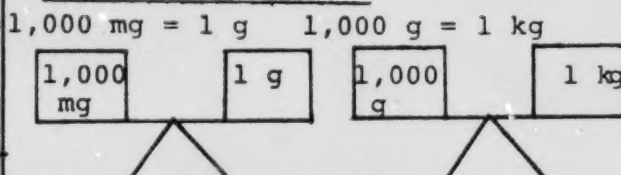
- 4) 12.63 g = _____ mg
- 450 g = _____ kg
- 1.038 kg = _____ g
- 7) 84 mg = _____ g
- 8) 12,389 g = _____ kg
- 9) 5.6 kg = _____ g

5. A GIRL'S WATCH MIGHT WEIGH  3 g 30 g 300 g	11. AN ORANGE MIGHT WEIGH ABOUT  1500 g 15 g 150 g
6. THE BOX OF CEREAL WEIGHED  520 g 520 kg 520 mg	12. A LARGE EGG MIGHT WEIGH ABOUT  62 mg 62 g 62 kg
7. A FOOTBALL PLAYER MIGHT WEIGH  12 kg 1200 kg 120 g	13. YOUR MATH BOOK PROBABLY WEIGHS ABOUT  7 g 700 g 7000 g
8. ONE STRAIGHT PIN MIGHT WEIGH  500 g 500 kg 500 mg	14. THE FOOTBALL WEIGHED  4 g 40 g 400 g
9. OUR DINNER FORKS EACH WEIGH  420 g 42 g 4200 g	15. YOUR TELEPHONE RECEIVER WEIGHS ABOUT  280 g 280 mg 280 kg
10. A DECK OF CARDS MIGHT WEIGH  80 g 80 mg 80 kg	16. A TENNIS SHOE MIGHT WEIGH ABOUT  21 g 210 g 2100 g

COMPLETE THE FOLLOWING CHART:

mg milli-gram	g gram
1325	1.325
45	0.045
	0.832
	4.3
3	
9529	
	8.5
122	
	0.15
3.90	
5218	

METRIC CONVERSIONS



COMPLETE THE FOLLOWING:

1000 g = _____ kg
 1 kg = _____ g
 1 g = _____ mg
 1000 mg = _____ g
 0.5 kg = _____ g
 1250 g = _____ kg
 432 mg = _____ g
 4600 g = _____ kg
 75 mg = _____ g
 9.2 g = _____ mg
 0.006 kg = _____ g
 24.6 g = _____ kg

g gram	kg kilogram
3405	3.405
	7.002
246	
555	
	0.008
15,299	
8300	
	7.2
	0.05
	1.11
	5

CIRCLE THE ANSWER

FILL IN THE BLANKS

- 1) 1.611 g 16.11 mg
 161.1 mg
 1611 mg
 2) 43.3 kg 433 g
 43300 g
 4330 g
 3) 92 g 920 kg
 0.092 kg
 9.2 kg
 8.304 g
 83.04 g
 0.8304 g

- 5) 4.932 kg = _____ g
 6) 8300 mg = 8.3 _____
 7) 0.032 _____ = 32 g
 8) _____ mg = 1.39 g
 9) 45 g = 45000 _____
 10) 0.85 kg = _____ g
 11) 3.2 _____ = 3200 g

- 12) 18 mg = 0.018 _____ kg
 13) _____ g = 0.93 kg
 14) _____ mg = 0.034 g
 15) 0.044 kg = _____ g
 16) 1200 mg = _____ g
 17) 12.932 _____ = 12932 g
 18) _____ mg = 18.71 g

TO FIND THE WEIGHT OF VERY LARGE OBJECTS WE USE THE METRIC TON ("TONNE")

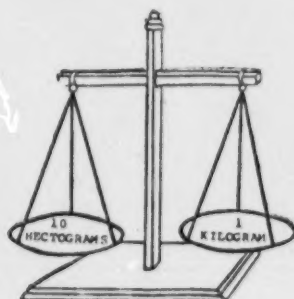
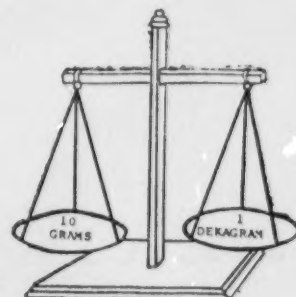
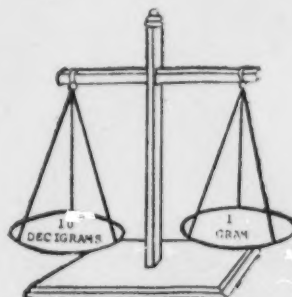
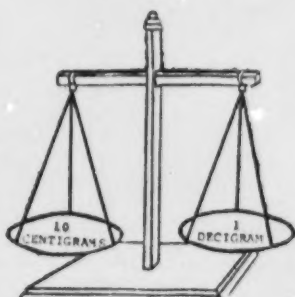
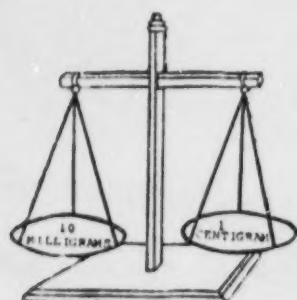
$$1000 \text{ KILOGRAMS} = 1 \text{ TON (t)}$$

THE METRIC TON IS USED FOR WEIGHTS OF HEAVY OBJECTS LIKE CARS AND TRUCKS.
 TO VISUALIZE A METRIC TON HAVE A CLASS WEIGH IN. HOW MANY KILOGRAMS DOES
 IT TAKE TO MAKE A METRIC TON? HOW MANY STUDENTS WERE NEEDED?
 BELOW ARE SOME OBJECTS WEIGHED IN TONS.

1. SMALL FOREIGN CAR 1 t
2. MEDIUM AMERICAN CAR 1.8 t
3. STATION WAGON 2 t
4. ELEPHANT 5 t
5. BLUE WHALE 177 t
6. OCEAN LINER 31000 t

ON THE CHART BELOW, CHECK THE UNIT YOU WOULD USE FOR WEIGHING EACH ITEM.
 FOR EXAMPLE, WHAT UNIT WOULD YOU USE IF YOU WERE GOING TO WEIGH YOUR PENCIL?
 WOULD YOU USE GRAMS, KILOGRAMS, OR METRIC TONS? A PENCIL IS SMALL AND DOES
 NOT WEIGH VERY MUCH. THEREFORE, YOU WOULD EXPRESS ITS WEIGHT IN GRAMS.

	GRAMS	KILOGRAMS	TONS
A TRUCK			
A BOY			
A CAN OF FROZEN ORANGE JUICE			
AN ELEPHANT			
A GOLDFISH			
A JAR OF PEANUT BUTTER			
A BAG OF POTATOE CHIPS			
AN OCEAN LINER			
A DOG			
A BAG OF GROCERIES			



10 MILLIGRAMS = 1 CENTIGRAM
 10 CENTIGRAMS = 1 DECIGRAM
 10 DECIGRAMS = 1 GRAM
 10 GRAMS = 1 DEKAGRAM
 10 DEKAGRAMS = 1 HECTOGRAM
 10 HECTOGRAMS = 1 KILOGRAM

MILLIGRAM (mg)
 CENTIGRAM (cg)
 DECIGRAM (dg)
 GRAM (g)
 DEKAGRAM (dag)
 HECTOGRAM (hg)
 KILOGRAMS (kg)

1000 g = 1 kg
 100 g = 1 hg
 10 g = 1 dag
 1 g = 10 dg
 1 g = 100 cg
 1 g = 1000 mg
 1000 kg = 1 t

USE > < OR = TO MAKE THE FOLLOWING SENTENCES TRUE.

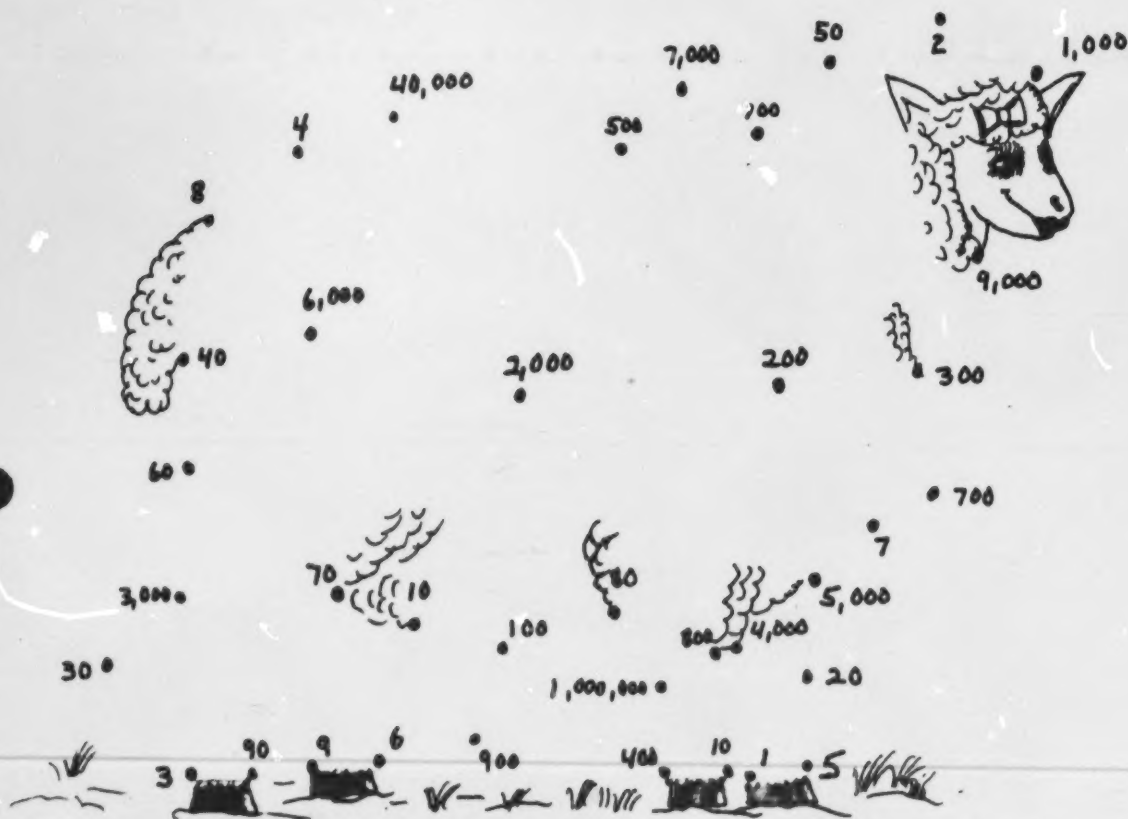
A. 10 dg _____ 1 gram
 B. 11 dg _____ 2 grams
 C. 1 cg _____ 10 mg
 D. 30 hg _____ 3 grams
 E. 10 dg _____ 1 gram
 F. 100 mg _____ 1 gram
 G. 200 dag _____ 2 grams
 H. 1 gram _____ 1 dg
 I. 700 hg _____ 7 kg
 J. 25 dg _____ 2 grams
 K. 10 dg _____ 1 gram
 L. 100 cg _____ 100 dg
 M. 1 gram _____ 7 hg
 N. 10 dg _____ 40 cg
 O. 3 grams _____ 30 dg
 P. 1100 kg _____ 1 t

1 kg _____ 400 gram
 2000 kg _____ 1 t
 10 dg _____ 1 gram
 40 dg _____ 400 mg
 20 dg _____ 2 grams
 11 dg _____ 1 hg
 300 hg _____ 3 grams
 500 cg _____ 5 grams
 800 cg _____ 8 dag
 9 dg _____ 1 gram
 11 dg _____ 1 gram
 70 cg _____ 1 gram
 100 cg _____ 1 gram
 18 cg _____ 1 gram
 1 gram _____ 100 cg
 2 grams _____ 25 dg

20 dg _____ 2 grams
 10 t _____ 100 kg
 100 cg _____ 1 gram
 50 kg _____ 500 grams
 100 cg _____ 2 kg
 909 mg _____ 1 gram
 400 cg _____ 4 dag
 600 cg _____ 6 grams
 10 dg _____ 1 gram
 10 dg _____ 10 cg
 8 dg _____ 1 gram
 1 gram _____ 10 dg
 1 gram _____ 100 cg
 2 grams _____ 200 cg
 1 gram _____ 10 dg
 7 dg _____ 1 gram

DIRECTIONS:

COMPLETE THE CONVERSIONS AT THE BOTTOM OF THE PAGE. AFTER YOU FIND ALL THE ANSWERS, LOCATE THE ANSWER OF QUESTION NUMBER 1 IN THE DRAWING. DRAW A LINE FROM THAT ANSWER TO THE ANSWER OF QUESTION NUMBER 2. CONTINUE TO CONNECT ALL THE ANSWERS IN SEQUENCE TO COMPLETE THE PICTURE. (NOTE: SOME NUMBERS WILL NOT BE USED)



- | | | |
|----------------------|------------------------|-------------------------|
| 1. 1 g = _____ mg | 11. 30 g = _____ dag | 21. 100 mg = _____ cg |
| 2. 20 mg = _____ cg | 12. 9 kg = _____ hg | 22. 8 hg = _____ g |
| 3. 5 cg = _____ mg | 13. 7 hg = _____ dag | 23. 4 dag = _____ cg |
| 4. 7 dg = _____ mg | 14. 900 g = _____ kg | 24. 10 dag = _____ hg |
| 5. 50 g = _____ dg | 15. 60 hg = _____ kg | 25. 500 mg = _____ dg |
| 6. 40 mg = _____ cg | 16. 10000 kg = _____ t | 26. 2000 dag = _____ kg |
| 7. 8000 mg = _____ g | 17. 1 kg = _____ dag | 27. 5 hg = _____ dg |
| 8. 400 g = _____ dag | 18. 800 hg = _____ kg | 28. 700 dag = _____ kg |
| 9. 600 hg = _____ kg | 19. 1 kg = _____ mg | 29. 30 g = _____ dg |
| 10. 3 t = _____ kg | 20. 40 g = _____ dg | 30. 9 dag = _____ cg |

SOLVE THE FOLLOWING PROBLEMS BY CHANGING TO THE LARGEST UNIT.

EXAMPLE:

ADD

$$\begin{array}{rcl}
 4 \text{ dg} & = & .4 \text{ g} = .40 \text{ g} \\
 8 \text{ g } 5 \text{ dg} & = & 8.5 \text{ g} = 8.50 \text{ g} \\
 7 \text{ dg } 6 \text{ cg} & = & .76 \text{ g} = .76 \text{ g} \\
 9 \text{ g} & = & 9.0 \text{ g} = \underline{9.00 \text{ g}} \\
 & & 18.66 \text{ g}
 \end{array}$$

Note: 18.66 g = 18 g 6 dg 6 cg

ADD

A.
$$\begin{array}{r}
 5 \text{ cg} \\
 7 \text{ dg} \\
 8 \text{ cg} \\
 9 \text{ dg} \\
 \hline
 7 \text{ g}
 \end{array}$$

B.
$$\begin{array}{r}
 4 \text{ kg} \\
 4 \text{ hg} \\
 3 \text{ dag} \\
 19 \text{ kg} \\
 \hline
 \end{array}$$

C.
$$\begin{array}{r}
 2 \text{ g} \\
 9 \text{ dg} \\
 7 \text{ cg} \\
 4 \text{ mg} \\
 8 \text{ cg} \\
 \hline
 7 \text{ dg}
 \end{array}$$

D.
$$\begin{array}{r}
 3 \text{ kg} \\
 7 \text{ g} \\
 6 \text{ kg} \\
 4 \text{ g} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4.3 \text{ dg} \\
 7 \text{ g} \\
 8.2 \text{ g} \\
 \hline
 9.6 \text{ dg}
 \end{array}$$

F.
$$\begin{array}{r}
 6.43 \text{ kg} \\
 91.6 \text{ hg} \\
 743 \text{ dag} \\
 \hline
 7.3 \text{ hg}
 \end{array}$$

G.
$$\begin{array}{r}
 7.6 \text{ cg} \\
 19 \text{ mg} \\
 8.7 \text{ mg} \\
 91 \text{ cg} \\
 \hline
 145 \text{ mg}
 \end{array}$$

H. SUBTRACT

$$\begin{array}{r}
 9.46 \text{ kg} \\
 - 624 \text{ g} \\
 \hline
 \end{array}$$

I. ADD

$$\begin{array}{r}
 4 \text{ g } 8 \text{ dg} \\
 7 \text{ g } 9 \text{ dg} \\
 \hline
 6 \text{ g } 4 \text{ dg}
 \end{array}$$

J. SUBTRACT

$$\begin{array}{r}
 4 \text{ kg } 7 \text{ hg } 8 \text{ dag } 7 \text{ g} \\
 - 2 \text{ kg } 9 \text{ hg } 3 \text{ dag } 9 \text{ g} \\
 \hline
 \end{array}$$

K. MULTIPLY

$$\begin{array}{r}
 3 \text{ cg } 5 \text{ dg } 7 \text{ g} \\
 \times \quad \quad \quad 6 \\
 \hline
 \end{array}$$

L. SUBTRACT

$$\begin{array}{r}
 5 \text{ g } 318 \text{ mg} \\
 - 2 \text{ g } 530 \text{ mg} \\
 \hline
 \end{array}$$

M. DIVIDE

$$\begin{array}{r}
 3 \overline{) 9 \text{ kg } 6 \text{ hg } 3 \text{ dg } 6 \text{ g}}
 \end{array}$$

N. DIVIDE

$$(18 \text{ kg } 6 \text{ g } 12 \text{ cg}) \div 6$$

SOLVE THE PROBLEMS

1. WHAT IS THE TOTAL WEIGHT OF 100 g OF CANDY,
50 g OF BUBBLE GUM, AND 75 g OF WALNUTS? _____ g
 2. ONE ORANGE WEIGHS 175 g. HOW MUCH DO 3
ORANGES WEIGH? _____ g
 3. BREAD WEIGHS 260 g MORE THAN CHEESE. IF THE
CHEESE WEIGHS 300 g, HOW MUCH DOES THE BREAD
WEIGH? _____ g
 4. MARGARINE COSTS \$1.00 FOR 500 g. HOW MUCH
MARGARINE CAN YOU BUY FOR \$2.00? _____ g
 5. JOANNE'S DINNER CONSISTS OF 170 g OF COOKED
LAMB, 125 g OF POTATOES, 125 g OF PEAS, AND
160 g OF FRUIT SALAD. HOW MANY GRAMS DOES
JOANNE'S DINNER WEIGH? _____ g
 6. SANDY BUYS 150 g OF CASHEWS; HOWEVER, HE
EATS ONLY 114 g. HOW MANY GRAMS OF CASHEWS
DOES SANDY HAVE LEFT? _____ g
 7. JIM WEIGHS 85 kg. HIS FATHER WEIGHS 69 kg.
HIS MOTHER WEIGHS 53 kg. WHAT IS THEIR
COMBINED WEIGHT? _____ kg
 8. IF A STATION WAGON WEIGHS 2 t, AND AN
AUTO CARRIER CAN HAUL 6 STATION WAGONS, HOW
MUCH WEIGHT CAN THE AUTO CARRIER HAUL? _____ t
 9. SHARON AND HER MOTHER HAVE A COMBINED WEIGHT
OF 82 kgs. IF HER MOTHER WEIGHS 53 kg, HOW
MANY kgs. DOES SHARON WEIGH? _____ kg
 10. AN OCEAN LINER WEIGHS 34 000 t. IT TAKES ON
78 t OF CARGO, 65 t OF PASSENGERS AND LUGGAGE
AND 63 t OF FOOD AND WATER. HOW MUCH DOES
THE OCEAN LINER WEIGH WHEN IT SETS SAIL? _____ t
 11. CINDY, TOM AND JACK HAVE A COMBINED WEIGHT OF
108 kg. IF CINDY WEIGHS 23 kg AND TOM WEIGHS
38 kg, HOW MUCH DOES JACK WEIGH? _____ kg
 12. DURING ONE SATURDAY'S BEEF SALE, MR. SUPER SOLD
76 kg. OF HAMBURGER AT \$2.00 PER kg, 134 kg OF
STEAK AT \$3.10 PER kg, AND 213 kg OF ROAST AT
\$2.70 PER kg. HOW MUCH MEAT DID HE SELL? _____ kg
- WHAT WAS HIS INCOME FROM THE HAMBURGER? _____
- WHAT PROVIDED THE LARGEST INCOME? _____

I.O. # W-18 UNDERSTAND WEIGHT IN THE METRIC SYSTEM

1. ANSWER 1-7 ON THE BACK
2. FILL IN THE BLANKS FOR 8-29.

1. WHAT IS THE BASIC UNIT OF WEIGHT IN THE METRIC SYSTEM?
2. WRITE THE EIGHT MASS UNITS IN ORDER FROM HEAVIEST TO LIGHTEST.
3. WRITE THE SYMBOL FOR EACH MASS UNIT.
4. WHICH FOUR UNITS ARE HEAVIER THAN 1 GRAM?
5. WHICH THREE UNITS ARE LIGHTER THAN 1 GRAM?
6. WHAT DOES DECI- MEAN IN THE WORD DECIGRAM?
7. WHAT DOES HECTO- MEAN IN THE WORD HECTOGRAM?

TRUE OR FALSE

8. MOST PEOPLE WEIGH ABOUT 1 KILOGRAM. _____
9. A DOG WEIGHS ABOUT 1 TON _____
10. A COUPLE OF RAISINS WEIGHT ABOUT 1 GRAM. _____
11. A COW MIGHT WEIGH ABOUT 1 TON _____
12. A HORSE MIGHT WEIGH ABOUT 5 MILLIGRAMS. _____
13. A SPIDER WEIGHS 2 TONS _____
14. A DROP OF WATER MIGHT WEIGH 20 MILLIGRAMS. _____
15. A FULL-GROWN ELEPHANT MIGHT WEIGH 25 KILOGRAMS. _____

ANSWER WITH A NUMBER

- | | | |
|----------------------|-----------------------|----------------------|
| 16. 5 t = _____ kg | 17. 8 g = _____ mg | 18. 6 g = _____ mg |
| 19. 9 kg = _____ g | 20. 2.5 kg = _____ g | 21. 0.3 t = _____ kg |
| 22. 0.6 g = _____ mg | 23. 4.51 kg = _____ g | 24. 0.05t = _____ kg |
| 25. 360 g = _____ kg | 26. 700 mg = _____ g | 27. 90 kg = _____ t |
| 28. 0.2 g = _____ mg | 29. 59 g = _____ kg | |

WEIGHT TEST

(PAGE 1 OF 2)

- 1) Which of the following weighs approximately 1 gram?
a) a brick b) a balloon c) a quarter d) none of these
- 2) Which of the following weighs more than 1 gram?
a) a thimble b) a postage stamp c) a drop of water d) a raisin
- 3) Which of the following weighs less than 1 gram?
a) an envelope b) a nickel c) a paper clip d) a teaspoon of water
- 4) A new pencil weighs approximately _____ grams.
a) .5 g b) 5 g c) 50 g d) 500 g
- 5) A chalkboard eraser weighs approximately _____.
a) .5 g b) 5 g c) 50 g d) 500 g
- 6) A can of soda weighs approximately _____.
a) .4 g b) 4 g c) 40 g d) 400 g
- 7) 300 g is equal to _____.
a) .3 kg b) 3 kg c) 30 kg d) none of these
- 8) Which one of the following weighs approximately 1 kilogram?
a) car b) brick c) nickel d) none of these
- 9) A bowling ball weighs approximately _____.
a) .7 kg b) 7 kg c) 70 kg d) 700 kg
- 10) A newborn baby weighs approximately _____.
a) 1 kg b) 3 kg c) 7 kg d) 10 kg

- 11) Which of the following weighs approximately 1 mg?
a) an aspirin b) a grain of salt c) a bowling ball d) a piece of chalk
- 12) 600 mg is equal to:
a) .6 g b) 6 g c) 60 g d) none of these
- 13) A dime weighs about 2
a) mg b) g c) kg d) none of these
- 14) 2.376 kg is equal to _____ grams.
a) 23.76 b) 237.6 c) 2376 d) .2376
- 15) Which unit would be used to best measure an ocean liner?
a) grams b) kilograms c) tons d) milligrams
- 16) 6.3 kg =
a) 63 dag b) 6300 dg c) 630 g d) 63 hg
- 17) An elephant weighs about:
a) 500 kg b) 2 t c) 3000 g d) 50 dag
- 18) 7 g 6 dg 4 cg 9 mg can also be written as:
a) 7649 g b) 7.649 g c) 7.649 mg d) 7649 mg
- 19) If 8 g 7 dg is added to 9 dg 6 cg, the sum would be:
a) 7g 6 dg b) 18 g 3 dg c) 9.66 g d) 966 g
- 20) At a beef sale, Mr. T-Bone sold 35 kg of beef at \$2.00 per kg and 72 kg of steak at \$3.10. How much did he earn from the sale? _____



milliliters

Larry
Liter



KILOLITER

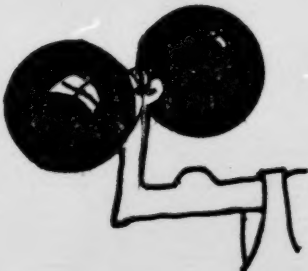
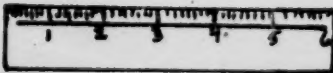
THE STUDENT WILL BE ABLE TO:

- C-1 IDENTIFY OBJECTS THAT ARE MEASURED WITH UNITS OF CAPACITY.
- C-2 IDENTIFY THE LITER AS A UNIT OF MEASUREMENT.
- C-3 RECOGNIZE THE LITER AS A UNIT OF MEASUREMENT.
- C-4 ESTIMATE IN TERMS OF THE LITER THE CAPACITY OF DIFFERENT SIZED CONTAINERS.
- C-5 UNDERSTAND THE RELATIONSHIP BETWEEN THE LITER AND THE MILLILITER.
- C-6 RECOGNIZE THE MILLILITER AS A UNIT OF MEASURE.
- C-7 ESTIMATE IN TERMS OF THE MILLILITER THE CAPACITY OF DIFFERENT SIZED CONTAINERS.
- C-8 UNDERSTAND THE RELATIONSHIP BETWEEN THE LITER AND THE KILOLITER.
- C-9 RECOGNIZE THE KILOLITER AS A UNIT OF MEASURE
- C-10 CHOOSE THE MOST APPROPRIATE UNIT OF CAPACITY FOR DIFFERENT SIZED CONTAINERS.
- C-11 CONVERT WITHIN MILLILITERS, LITERS AND KILOLITERS.
- C-12 UNDERSTAND THE RELATIONSHIP BETWEEN VOLUME AND CAPACITY.
- C-13 FIND THE VOLUME AND CAPACITY OF RECTANGULAR PRISMS.
- C-14 UNDERSTAND THE RELATIONSHIP BETWEEN VOLUME, CAPACITY AND WEIGHT.
- C-15 CONVERT CONSUMER ORIENTED UNITS OF MEASURE INTO METRIC UNITS OF CAPACITY.
- C-16 SOLVE VERBAL PROBLEMS USING METRIC UNITS OF CAPACITY.

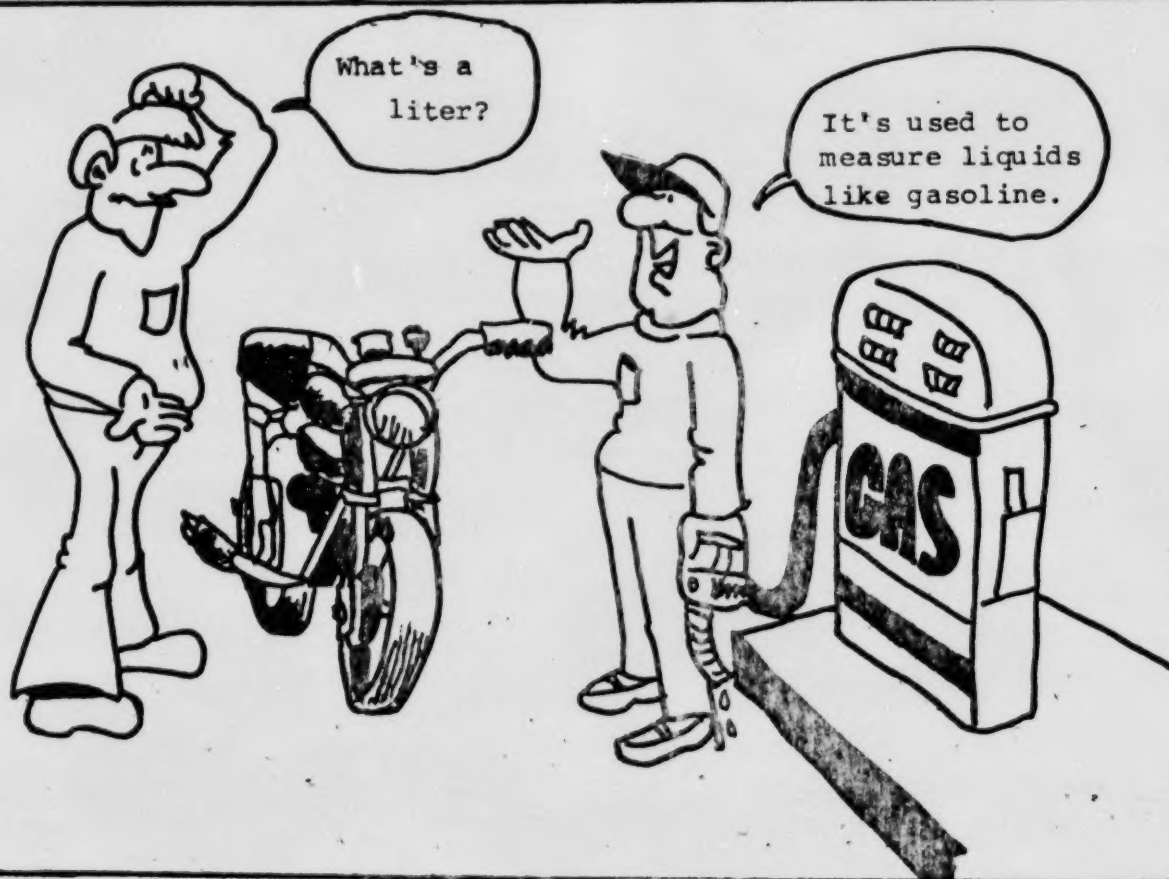
I.O. # C-1 TO IDENTIFY OBJECTS THAT ARE MEASURED WITH UNITS OF CAPACITY.

CAPACITY IS THE MEASURE OF CONTENTS THAT AN OBJECT CAN HOLD. WE USUALLY TALK ABOUT LIQUID CAPACITY, THAT IS, HOW MUCH LIQUID A CONTAINER CAN HOLD

DRAW A CIRCLE AROUND THE THINGS YOU WOULD MEASURE WITH UNITS OF CAPACITY.

A. 	B. 	C. 
D. 	E. 	F. 
G. 	H. 	I. 
J. 	K. 	L. 

I.O. # C-2 TO IDENTIFY THE LITER AS A UNIT OF MEASUREMENT.

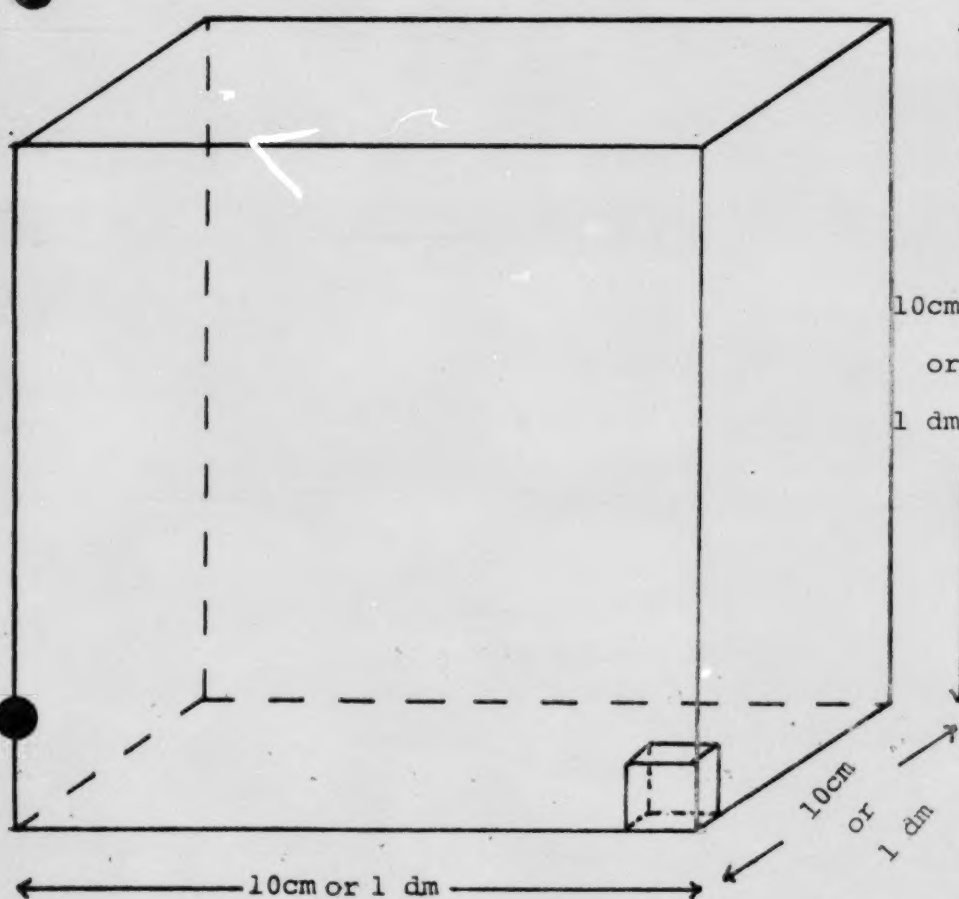


IN THE METRIC SYSTEM LIQUID CAPACITY IS MEASURED IN LITERS

CIRCLE THE FOLLOWING THAT WOULD BE MEASURED IN LITERS

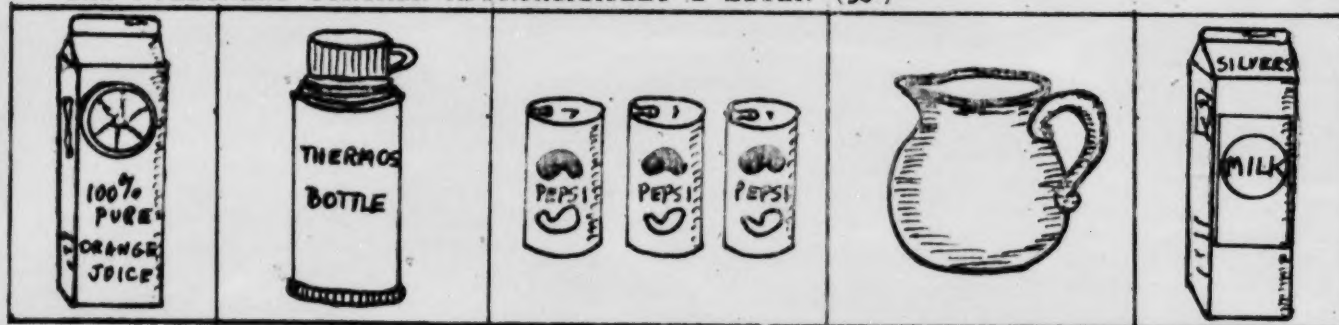


I.O. # C-3 TO RECOGNIZE THE LITER AS A UNIT OF MEASUREMENT.



1000 cm³ = 1 LITER
 IF YOU FILLED THIS
 CONTAINER WITH WATER
 YOU WOULD HAVE 1
 LITER OF WATER. THE
 CONTAINER IS 10 cm
 LONG, 10 cm WIDE, AND
 10 cm HIGH, THE VOLUME
 IS 1000 cm³. SO, 1
 LITER IS THE SAME AS
 1000 CUBIC CENTIMETERS.

THE FOLLOWING CONTAIN APPROXIMATELY 1 LITER (L)



NAME 3 CONTAINERS THAT HOLD APPROXIMATELY 1 LITER.

- 1) _____
- 2) _____
- 3) _____

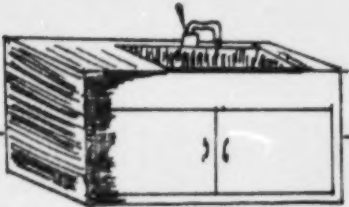
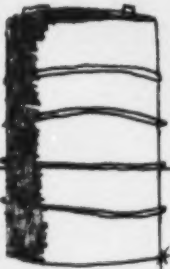
CIRCLE EACH OBJECT YOU THINK HOLDS MORE THAN 1 LITER.

1. 	2. 	3. 	4. 
5. 	6. 	7. 	8. 

PUT A CHECK IN THE CORRECT BOX

CONTAINER	MORE THAN 1 LITER	ABOUT 1 LITER	LESS THAN 1 LITER	CONTAINER	MORE THAN 1 LITER	ABOUT 1 LITER	LESS THAN 1 LITER
A GLASS OF WATER				A TEST TUBE			
AN AUTO GAS TANK				A GARBAGE CAN			
AN OIL TRUCK				A TEA POT			
1 dm ³				A BATHTUB			
A FAMILY SIZE SODA				A SWIMMING POOL			
? ?	✓			? ?			✓

I.O. # C 4- TO ESTIMATE IN TERMS OF THE LITER THE CAPACITY OF
DIFFERENT SIZED CONTAINERS.

		
BLEACH BOTTLE 4 LITERS	KITCHEN SINK 35 LITERS	OIL DRUM 160 LITERS
		
MILK 1 LITER	COFFEE POT 2 LITERS	GARBAGE CAN 120 LITERS

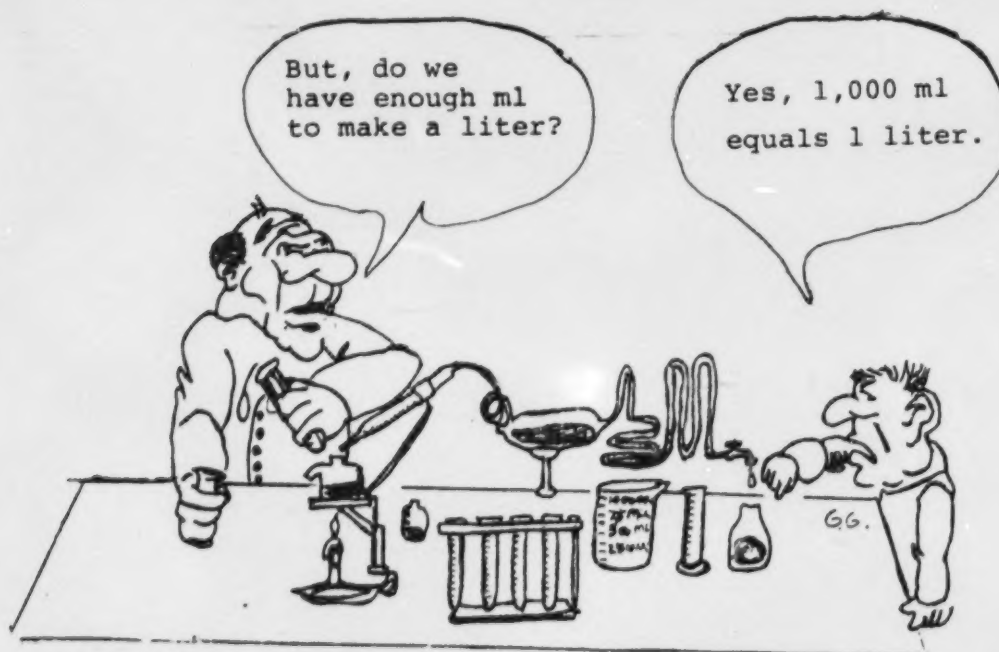
USE THE ABOVE PICTURES TO GUIDE YOU IN ESTIMATING THE CAPACITY
OF THE FOLLOWING CONTAINERS.



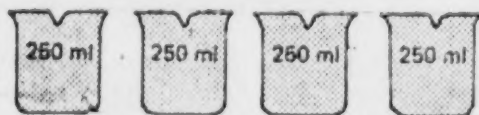
FISH TANK _____ LITERS
LARGE TOMATOE-JUICE CAN _____ LITERS
PAIL _____ LITERS
BATHTUB _____ LITERS
LARGE COKE _____ LITERS



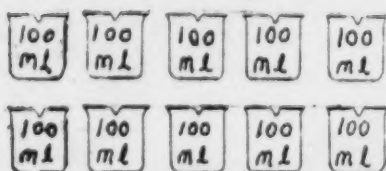
I.O.# C-5 TO UNDERSTAND THE RELATIONSHIP BETWEEN THE LITER AND THE MILLILITER.



1 LITER = 1000 ml



1000 ml = 1 LITER



FILL IN BLANKS

- 1000 ml = 1 L
 900 ml = .9 L
 800 ml = .8 L
 700 ml = ____ L
 600 ml = ____ L
 ____ ml = .5 L
 ____ ml = .4 L
 300 ml = ____ L
 ____ ml = .2 L
 100 ml = .1 L

FILL IN THE BLANKS

- 1) 3 L = ____ ml 2) 24 L = ____ ml 3) 4.5 L = ____ ml
 4) .8 L = ____ ml 5) .17 L = ____ ml 6) 8000 ml = ____ L
 7) 2465 ml = ____ L 8) 145 ml = ____ L 9) 27 ml = ____ L

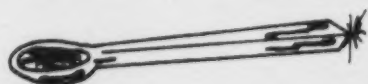
I.O. # C-6
C-7

RECOGNIZE THE MILLILITER AS A UNIT OF MEASURE.
ESTIMATE IN TERMS OF THE MILLILITER THE CAPACITY
OF DIFFERENT SIZED CONTAINERS.



A CUBE 1 cm LONG, 1 cm WIDE, AND 1 cm HIGH
HAS A CAPACITY OF 1 MILLILITER (ml)

1 MILLILITER (ml) = 1 CUBIC CENTIMETER (cm³)



A TEASPOON HOLDS ABOUT 5 ml



A TABLESPOON HOLDS ABOUT 15 ml



AN EGG CONTAINS ABOUT 80 ml



A CAN OF SODA HOLDS 355 ml

ESTIMATE THE CAPACITY TO THE NEAREST
MILLILITER.

1. TIN CAN _____ ml
2. BOTTLE CAP: _____ ml
3. MILK CARTON: _____ ml
4. PAPER CUP: _____ ml
5. POP BOTTLE: _____ ml



COMPLETE: USE l OR ml

6. A SWIMMING POOL HOLDS 45000 _____
7. A THIMBLE HOLDS ABOUT 5 _____
8. A COFFEE CUP HOLDS ABOUT 200 _____
9. AN AQUARIUM HOLDS ABOUT 50 _____
10. A CAR'S GAS TANK HOLDS ABOUT 75 _____

- I.O. # C-8 UNDERSTAND THE RELATIONSHIP BETWEEN THE LITER AND THE KILOLITER
 # C-9 RECOGNIZE THE KILOLITER AS A UNIT OF MEASURE



1000 LITER (l) = 1 KILOLITER (kl) = 1 CUBIC METER

FILL IN:

- | | | |
|-------------------------|---------------------------|---------------------------|
| 1) 900 l = .09 kl | 4) <u> 1 </u> l = .6 kl | 7) 300 l = <u> </u> kl |
| 2) 800 l = <u> </u> kl | 5) <u> 1 </u> l = .5 kl | 8) <u> 1 </u> l = .2 kl |
| 3) 700 l = <u> </u> kl | 6) 400 l = <u> </u> kl | 9) 100 l = <u> </u> kl |

THE KILOLITER IS THE LARGEST UNIT OF LIQUID MEASURE THAT IS COMMONLY USED. PICTURES BELOW ARE EXAMPLES OF CONTAINERS THAT ARE MEASURED IN KILOLITERS.

 BOEING 747 FUEL TANKS 172 kl	 GASOLINE TANK TRUCK 5.2 kl
 SWIMMING POOL 1,742 kl	 WATER TANK TOWER <u> </u> ?

NAME 3 OTHER CONTAINERS THAT WOULD BE MEASURED IN KILOLITERS:

- 1) 2) 3)

WOULD YOU BELIEVE THAT AMERICANS CONSUME 1,900,000,000 KILOMETERS OF FRESH WATER EACH DAY?

CIRCLE THE BEST MEASUREMENT:

350 ml 350 ml 3.5 l



2 ml 200 ml 20000 ml



300 ml 8 l 50 l



100 ml 500 ml 50 l



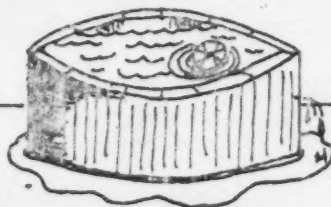
0.8 l 8 l 80 ml



200 ml 20 ml 2 ml



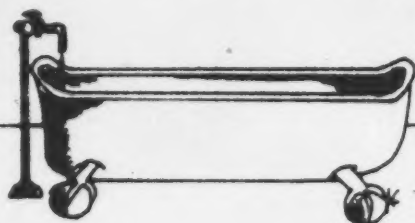
52 ml 52 l 52 kl



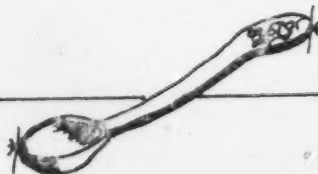
800 ml 800 l 800 kl



3000 ml 30 ml 300 l



10 ml 1000 ml 100 l



50 ml 0.5 l 5 ml



100 ml 1 l 10 l

CONVERSION CHART

$1000 \text{ ml} = 1 \text{ L}$

$1 \text{ ml} = .001 \text{ L}$

$1 \text{ L} = .001 \text{ ml}$

$1 \text{ kL} = 1000 \text{ L}$

I. FILL IN THE CORRECT ANSWER FOR EACH OF THE FOLLOWING:

- | | | |
|---------------------|-----------------------|-------------------------|
| 1. 3 ml = .003 L | 11. 8 L = _____ ml | 21. 2.5 kL = _____ L |
| 2. 7 ml = _____ L | 12. 16 L = _____ ml | 22. 3.2 kL = _____ L |
| 3. 19 ml = _____ L | 13. 400 L = _____ kL | 23. 4.61 kL = _____ L |
| 4. 10 ml = _____ L | 14. 900 L = _____ kL | 24. 7.92 kL = _____ L |
| 5. 30 ml = _____ L | 15. 645 L = _____ kL | 25. _____ L = 4000 ml |
| 6. 50 ml = _____ L | 16. 1000 L = _____ kL | 26. _____ L = 7500 ml |
| 7. 100 ml = _____ L | 17. 6 kL = _____ L | 27. _____ L = 10,500 ml |
| 8. 400 ml = _____ L | 18. 10 kL = _____ L | 28. _____ L = 12,250 ml |
| 9. 1 L = _____ ml | 19. 20 kL = _____ L | 29. _____ kL = 14,500 L |
| 10. 4 L = _____ ml | 20. 25 kL = _____ L | 30. _____ kL = 4300 L |

II. CIRCLE THE GREATER CAPACITY.

- | | |
|-----------------------|-----------------------|
| 1. 149 ml or 1.49 L | 2. 0.628 L or 750 ml |
| 3. 1.5 L or 1270 mL | 4. 949 L or 1 kL |
| 5. 0.030 kL or 300 mL | 6. 2 L or 2500 ml |
| 7. 87 ml or 0.87 L | 8. 12 L or 1500 ml |
| 9. 3600 L or 4 kL | 10. 0.201 kL or 150 L |

This box has a volume of 5 cm^3 . What's its capacity?



1 cm^3 has a capacity of 1 ml, so the box has a capacity of 5 ml.

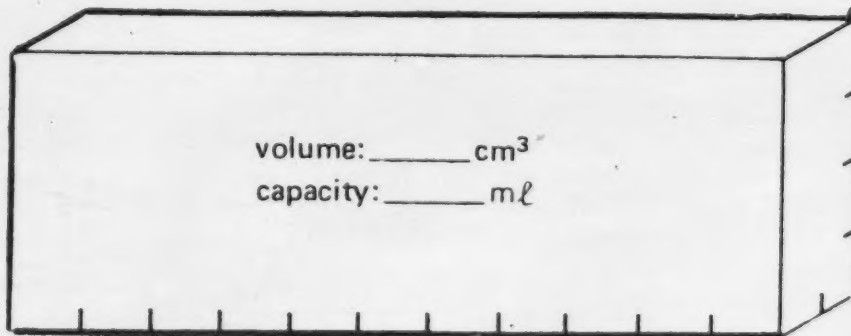
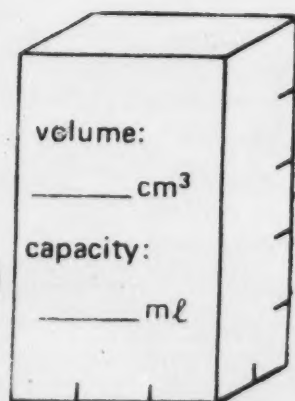
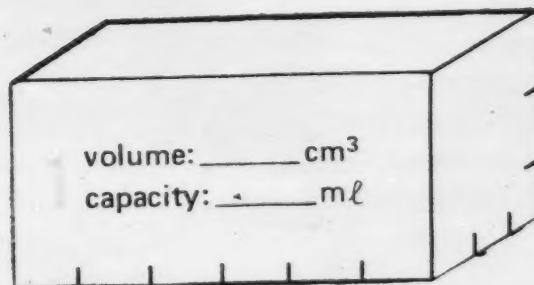
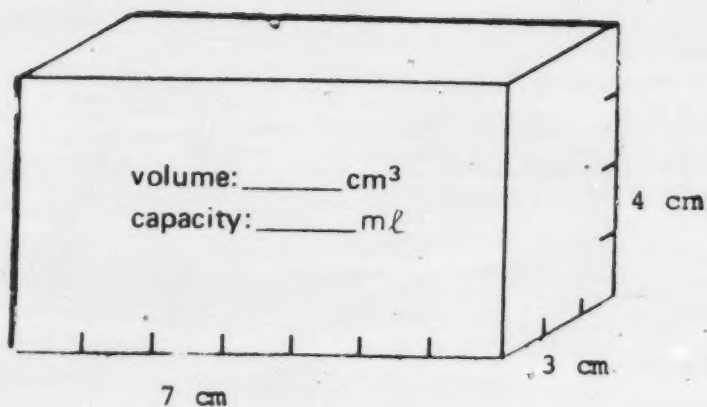


9 A.M.
1 c.c.



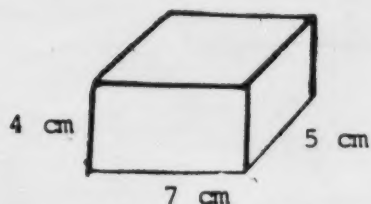
NOON
1 ml

VOLUME	CAPACITY
7 cm^3	7 ml
15 cm^3	
	24 ml
185 cm^3	
	92 ml
	8.4 ml



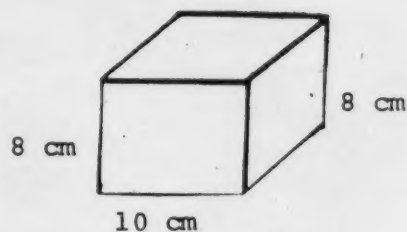
I. FIND THE VOLUME OF EACH BOX. THEN FIND ITS CAPACITY.

(V = VOLUME, C = CAPACITY)



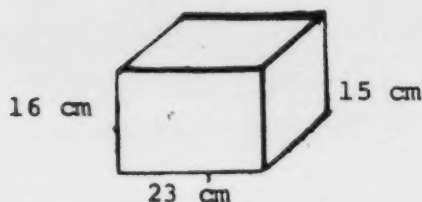
1. $V =$ _____ cm^3

C = _____ ml



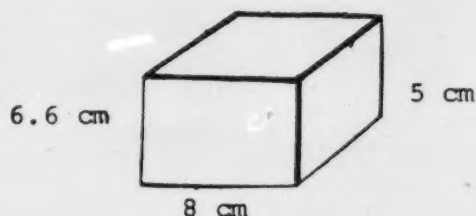
2. $V =$ _____ cm^3

C = ml



3. $V =$ _____ cm^3

C = ml



4. $V =$ _____ cm^3

C = ml

II. ANSWER THE FOLLOWING.

1. THE VOLUME OF A FISH TANK IS $82\,000\text{ cm}^3$. HOW MANY LITERS OF WATER WILL FILL THE TANK? _____
2. JERRY USED 6.5 LITERS OF WATER TO FILL A TANK. WHICH OF THE FOLLOWING COULD BE THE LENGTH, WIDTH, AND HEIGHT OF THE TANK SHE FILLED? _____
 - a) $L = 10\text{ cm}$, $W = 100\text{ cm}$, $H = 65\text{ cm}$
 - b) $L = 5\text{ cm}$, $W = 20\text{ cm}$, $H = 65\text{ cm}$
 - c) $L = 10\text{ cm}$, $W = 5\text{ cm}$, $H = 130\text{ cm}$

CEREAL COOKIES

MAKES 24 COOKIES

100 g SHORTENING
140 g SUGAR
2 EGGS
5 ml VANILLA EXTRACT
3 g SALT
2 g BAKING POWDER
150 g FLOUR
80 g HIGH-PROTEIN CEREAL

BLEND SHORTENING, SUGAR, VANILLA.
ADD EGGS AND BEAT. ADD DRY
INGREDIENTS AND 20 g OF CEREAL. MAKE
INTO BALLS. ROLL IN REMAINING CEREAL.
FLATTEN. BAKE AT 190°C FOR 11 MINUTES.

SPECIAL HAMBURGERS

SERVES 6 PEOPLE

0.5 kg GROUND BEEF
30 ml FINELY CHOPPED GREEN
PEPPER
60 ml CHOPPED ONION
80 ml CATSUP
15 ml HORSERADISH
7 ml DRY MUSTARD
2 ml SALT

COMBINE INGREDIENTS. FORM
PATTIES. BAKE AT 190° FOR
30 MINUTES.

5. RALPH WANTS TO MAKE 144 CEREAL
COOKIES. EACH INGREDIENT SHOULD
BE MULTIPLIED BY
6. HOW MUCH OF EACH INGREDIENT SHOULD
RALPH USE?

7. ELLIOT PLANS TO MAKE
SPECIAL HAMBURGERS FOR
3 PEOPLE. HOW MUCH OF
EACH INGREDIENT SHOULD HE
USE?

HOWIE PLANS TO MAKE SPECIAL
HAMBURGERS AND CEREAL
COOKIES FOR 12 PEOPLE.

8. HOW MUCH OF EACH COOKIE
INGREDIENT SHOULD THEY USE?
9. HOW MUCH OF EACH HAMBURGER
INGREDIENT SHOULD THEY USE?

USING METRIC MEASURES IN COOKING

GRAHAM MUFFINS

MAKES 12 MUFFINS

165 g GRAHAM CRACKER CRUMBS
7 g BAKING POWDER
1 EGG
125 ml MILK
75 ml CORN OIL
50 ml CORN SYRUP
55 g CHOPPED PECANS

GREASE 12 MUFFIN CUPS. COMBINE
CRACKER CRUMBS AND BAKING POWDER.
BEAT EGG. ADD MILK, OIL, AND
SYRUP. ADD TO CRUMBS. STIR. ADD
NUTS. COOK AT 190°C FOR 20
MINUTES.

LAZY DAY LASAGNE

SERVES 4 PEOPLE

170 g LASAGNE NOODLES
1 ml DRIED, CRUSHED OREGANO
500 g SPAGHETTI SAUCE WITH MEAT
250 ml CREAM-STYLE COTTAGE CHEESE
180 g SLICED MOZZARELLA CHEESE

COOK NOODLES. ADD OREGANO TO
SPAGETTI SAUCE. IN BAKING DISH,
MAKE LAYERS OF NOODLES, COTTAGE
CHEESE, CHEESE SLICES AND SAUCE.
REPEAT LAYERS. BAKE AT 185°C
FOR 30 MINUTES.

1. GARY WANTS TO DOUBLE THE
RECIPE FOR GRAHAM MUFFINS.
HOW MUCH OF EACH INGREDIENT
SHOULD HE USE?

2. THE MARCUS' WANT TO SERVE
LASAGNE TO 10 PEOPLE. THEY
NEED TO MULTIPLY EACH
INGREDIENT BY .

3. HOW MUCH OF EACH INGREDIENT
SHOULD THEY USE?

4. MR. SEYMOUR WANTS TO MAKE
LASAGNE FOR HIMSELF AND HIS
WIFE. HOW MUCH OF EACH
INGREDIENT SHOULD HE USE?

MAKE EACH SENTENCE TRUE BY USING > , < , or =

- A. 1 GLASSFUL _____ 1 LITER
 B. 2 TABLESPOONS _____ 15 DROPS
 C. 3 TABLESPOONS _____ 45 ml
 D. 1 TABLESPOON _____ 45 DROPS
 E. 15 DROPS _____ 2 cc
 F. 1 ml _____ 30 DROPS



RECIPE

CHOCOLATE CHIP COOKIES

200 ml FLOUR	175 ml BROWN SUGAR
2 ml BAKING SODA	1 EGG
2 ml SALT	250 ml CHOCOLATE CHIPS
125 ml BUTTER	125 ml CHOPPED NUTS
175 ml SUGAR	5 ml VANILLA (one teaspoon)

PREHEAT OVEN TO 190°C. MIX INGREDIENTS.
 DROP BATTER ABOUT 5 cm. APART ON UNGREASED
 BAKING SHEET. BAKE FOR 8-10 MINUTES.



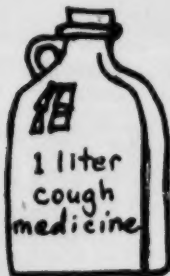
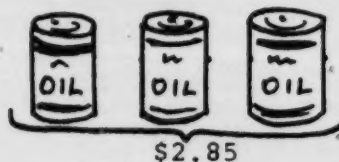
CAPACITY-VOLUME TEST

(PAGE 1 OF 2)

1. The measure of capacity is in a) meters b) liters c) grams d) cm
2. An example of an object that is measured in capacity is:
a) a brick b) a keg c) a container of milk d) a ruler
3. Which is not measured in units of capacity?
a) a gas tank b) a can of soda c) a fishtank d) a nickel
4. Which object would measure less than 1 liter?
a) an auto gas tank b) a garbage can c) a family size soda
d) a glass of water
5. Which object would measure about 1 liter?
a) a fishtank b) a bathtub c) a glass of water d) a quart of milk
6. Which cubic measure would be equal to 1 liter?
a) 500 c.c. b) 1000 c.c. c) 2000 c.c. d) 1 c.c.
7. The volume of the container below is:

a) 100 cm ³	b) 1000 cm ³
c) 2 000 cm ³	d) 20 000 cm ³
8. The capacity of the container in #7 is:
a) 2 l b) 20 l c) 10 l d) none of these
9. One teaspoon is equal to:
a) 5 ml b) 10 ml c) 15 ml d) 3 l
10. 800 ml is equal to :
a) .8 l b) 8 l c) 80 l d) none of these
11. A can of soda contains:
a) 50 ml b) 350 ml c) 500 ml d) 1 l

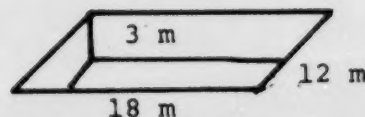
- 1) JOE BOUGHT 3 LITERS OF MOTOR OIL FOR HIS CAR. HE PAID \$2.85 FOR THE OIL. HOW MUCH DID HE PAY FOR EACH LITER? _____



2. IT TAKES 125 MILLILITERS OF COUGH MEDICINE TO MAKE 1 BOTTLE OF COUGH-NOT SYRUP. HOW MANY BOTTLES OF SYRUP CAN BE MADE FROM 1 LITER OF COUGH MEDICINE?

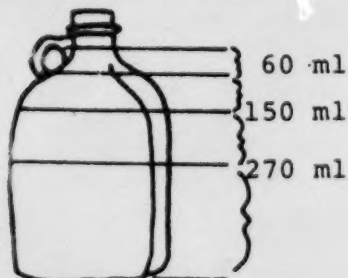
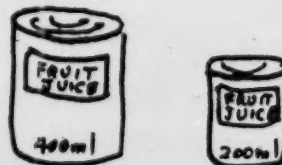
_____ BOTTLES

- 3) THE EXCAVATION FOR THE BASEMENT OF A HOUSE HAD THE DIMENSIONS GIVEN. WHAT IS THE VOLUME OF EARTH THAT WAS REMOVED? _____ m^3



- 4) IN PROBLEM 3, IT COST \$1.30 PER CUBIC METER TO REMOVE THE EARTH. WHAT WAS THE COST FOR THE EXCAVATION? _____

- 5) JOAN COMPARED TWO CANS OF FRUIT JUICE IN A GROCERY STORE. A 400 ml CAN SOLD FOR 58 CENTS. A 200 ml CAN SOLD FOR 30 CENTS. WHICH IS MORE ECONOMICAL? _____ ml CAN

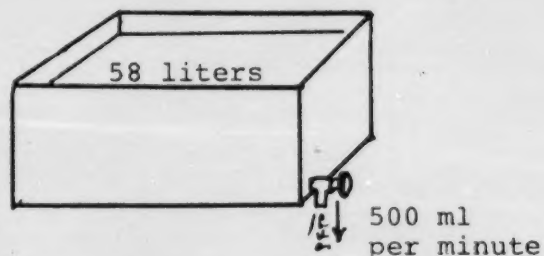


6. PAM'S MOTHER BOUGHT 1 LITER OF LIQUID CLEANER. SHE USED 60 ml TO CLEAN A DRAW, 150 ml FOR A DOOR, AND 270 ml FOR THE STOVE. HOW MUCH LIQUID CLEANER DID SHE HAVE LEFT _____ ml

- 7) THE GASOLINE TANK ON A SPORTS CAR HAS A CAPACITY OF 60 LITERS. THE CAR CAN TRAVEL 12 KILOMETERS ON A LITER OF GASOLINE. HOW FAR CAN IT TRAVEL ON A FULL TANK OF GASOLINE? _____

- 8) A TANK CONTAINS 58 LITERS OF WATER. IT HAS A DRAIN PIPE THAT WILL DRAIN 500 ml PER MINUTE. HOW LONG WOULD IT TAKE TO DRAIN THE TANK?

____ HOUR ____ MIN



6 ml
glycerin



26 cc
water

- 9) IN A SCIENCE EXPERIMENT JOHN MIXED 6 cm^3 OF GLYCERIN WITH 26 ml OF WATER. WHAT WAS THE CAPACITY OF THE RESULTING MIXTURE? ____ ml

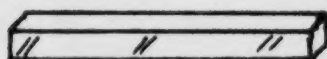
Last month

This month



- 10) LAST MONTH A WATER-METER READING WAS 2175 CUBIC METERS. THIS MONTH THE READING IS 2641 CUBIC METERS. HOW MUCH WATER WAS USED DURING THE MONTH? ____ m^3

4 mm

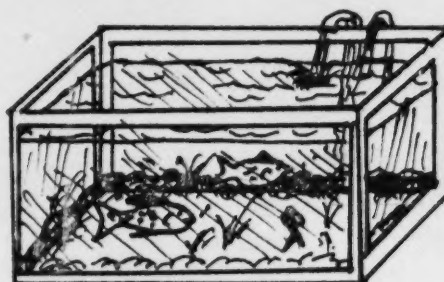


35 mm

3 mm

- 11) A MACHINE SHOP MAKES STEEL GEAR PINS THE SIZE SHOWN AT THE LEFT. WHAT IS THE VOLUME OF EACH GEAR PIN? ____ mm^3

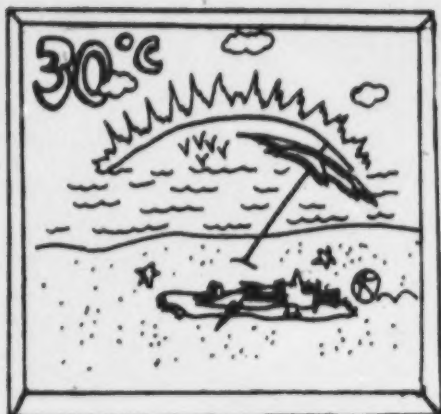
- 12) THERE ARE 18 LITERS OF WATER IN AN AQUARIUM. THE FILTER PUMP CIRCULATES 60 MILLILITERS OF WATER EVERY MINUTE. HOW LONG WILL IT TAKE TO CIRCULATE ALL OF THE WATER? ____ HOURS



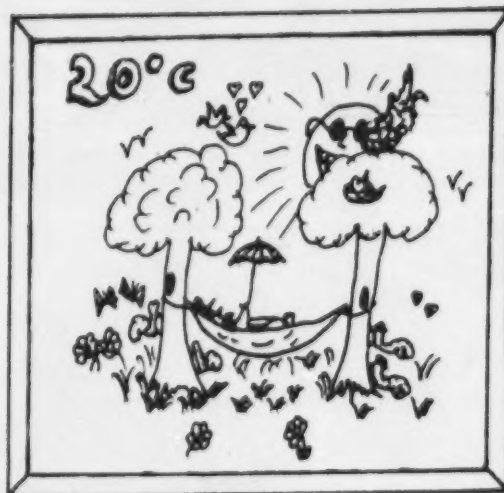
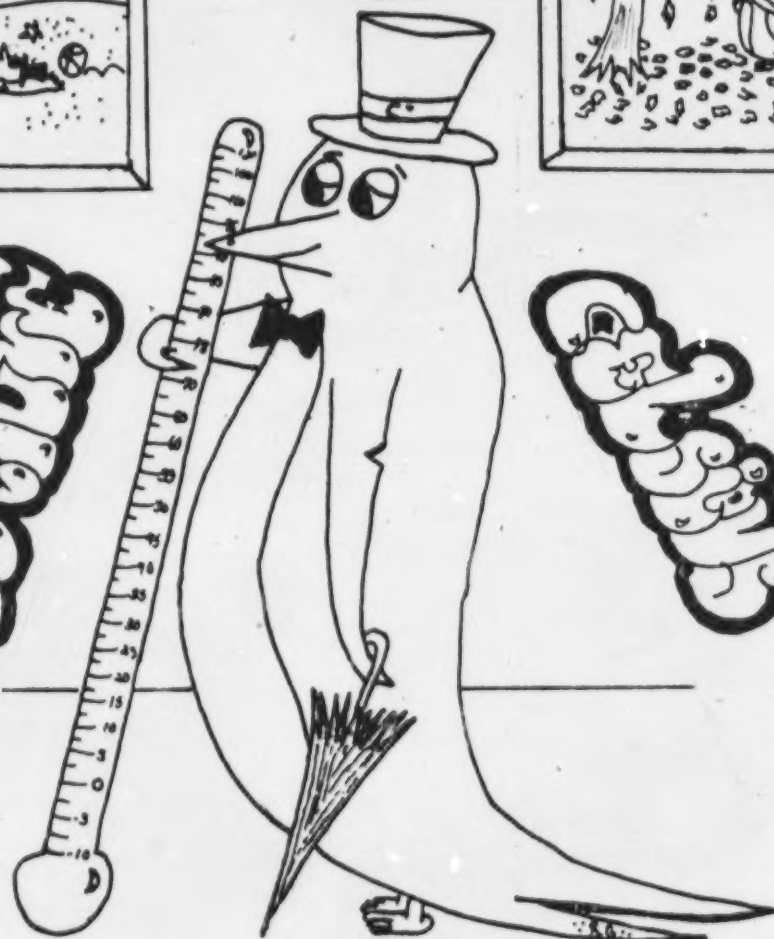
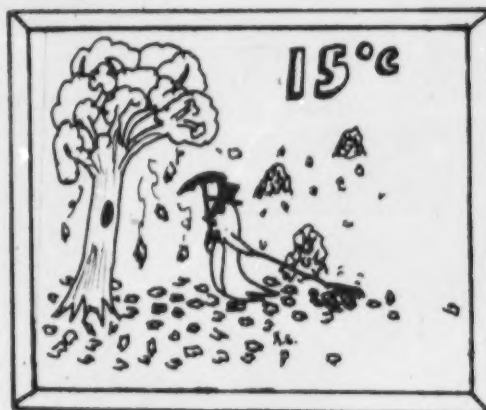
CAPACITY-VOLUME TEST

(PAGE 2 OF 2)

12. An airplane's fuel tank is filled with:
a) 10 000 ml b) 150 l c) 150 kl d) none of these
13. One liter of water weighs:
a) one gram b) one kilogram c) 1 kiloliter d) none of these
14. 1000 cc of water is equal to:
a) one liter b) 1000 ml c) 1 kilogram d) all of these
15. The gasoline tank on a motorcycle has a capacity of 8 liters. The car can travel 80 kilometers on a liter of gasoline. How far can it travel on a fuel tank of gasoline? _____
16. If a bucket of water weighs 500 grams, this is equal to _____.
a) 500 kl b) 500 l c) 500 ml d) none of these
17. .065 kl = a) 65 l b) 650 l c) .65 l d) 65 cc
18. Paul has 1840 liters of water in his pool. If he adds 1670 liters of water to fill up the pool, then the amount of water his pool holds is:
a) 3410 l b) 35.10 kl c) 3.51 kl d) 3510 kl
19. 45000 ml = a) .45 kl b) 450 l c) .045 kl d) 4.5 l
20. If blood is thicker than water, then a jar that can hold 16 ml of water would weigh about:
a) 17 g of blood b) 15 g of blood c) 16 g of blood
d) 18 mg of blood.



Tommy
Temperature!



PROJECT T.I.M.E. - NONGRADED J.H.S. LEVEL METRIC INSTRUCTIONAL OBJECTIVES
(TEMPERATURE)

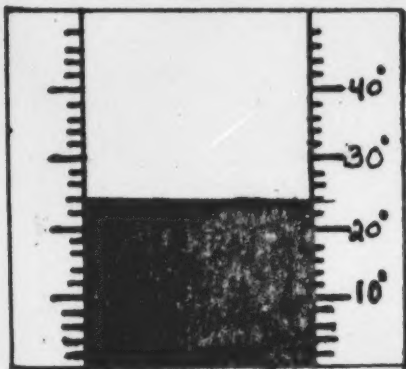
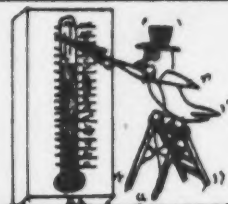
THE STUDENT WILL BE ABLE TO:

- T-1 IDENTIFY MARKINGS ON A THERMOMETER.
- T-2 UNDERSTAND THE ORIGIN OF THE CELSIUS THERMOMETER.
- T-3 RECOGNIZE THE CELSIUS SCALE AS A MEANS OF MEASURING TEMPERATURE.
- T-4 RECORD AND IDENTIFY DAILY AND MONTHLY TEMPERATURE USING CELSIUS THERMOMETER.
- T-5 ESTIMATE TEMPERATURES OF VARIOUS SCENES AND SITUATIONS.
- T-6 SUGGEST A FITTING DESCRIPTION FOR GIVEN TEMPERATURE.
- T-7 ANSWER WORD PROBLEMS BASED ON THE CELSIUS THERMOMETER.

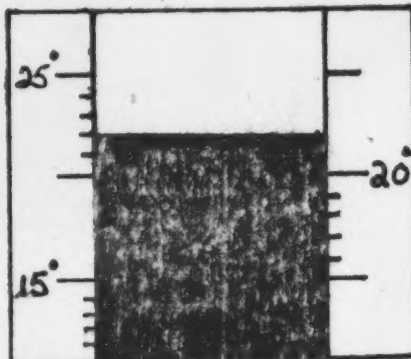
NOTE:

1. TEMPERATURE IS MEASURED IN DEGREES
2. EACH MARKING REPRESENTS A SPECIFIC NUMBER OF DEGREES.

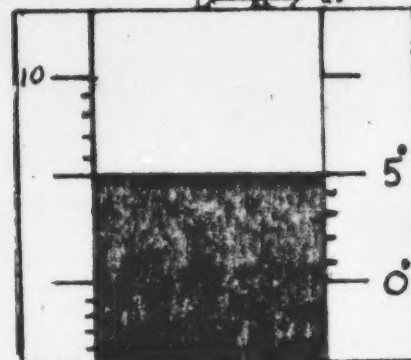
WHAT ARE THE TEMPERATURE READINGS IN A TO F?
 COLOR IN CORRECT TEMPERATURE IN G TO I.



A. _____



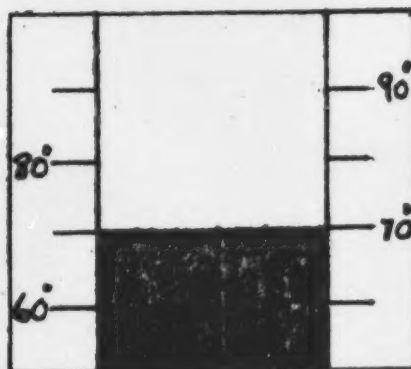
B. _____



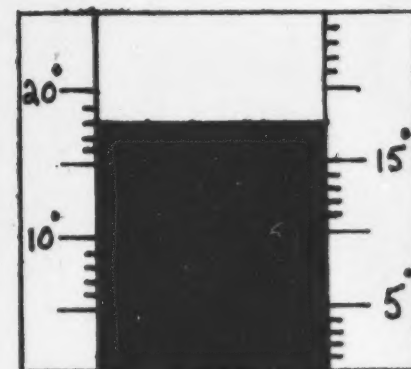
C. _____



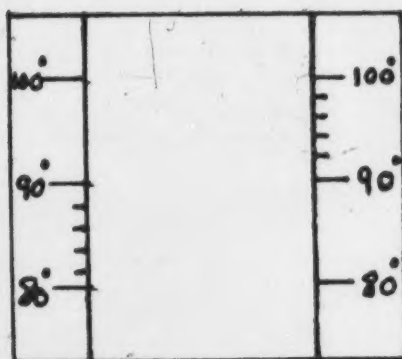
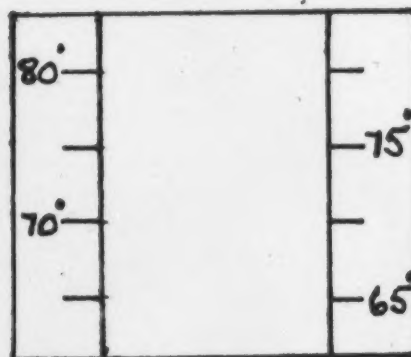
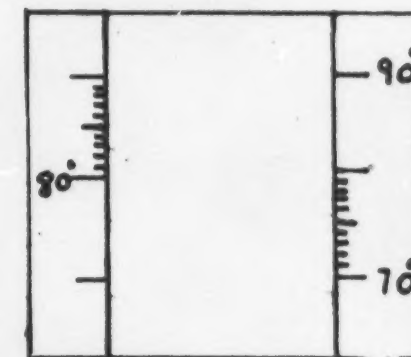
D. _____



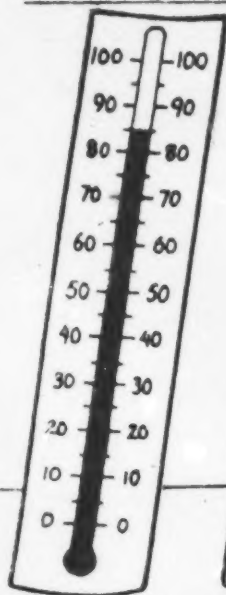
E. _____



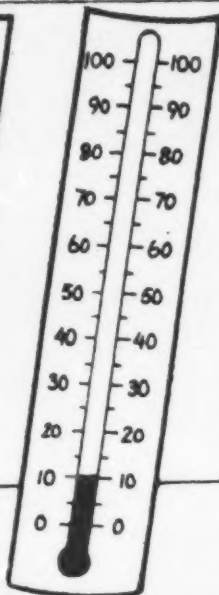
F. _____

G. 92°H. 82°I. 70°

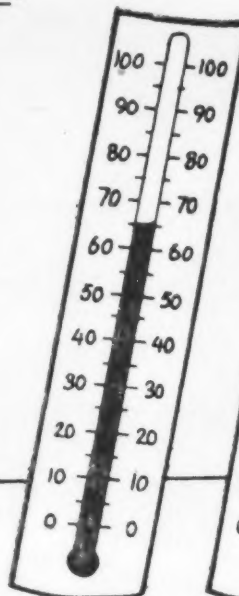
RECORD THE TEMPERATURE SHOWN ON THE THERMOMETER:



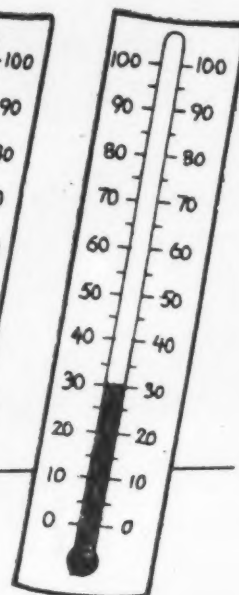
°C



°C

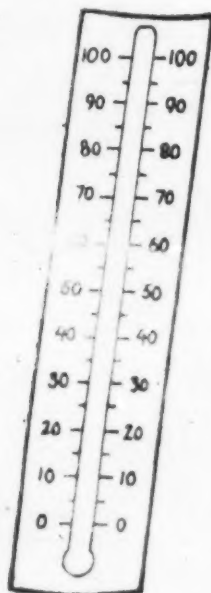


°C

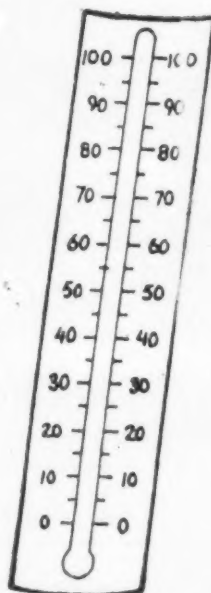


°C

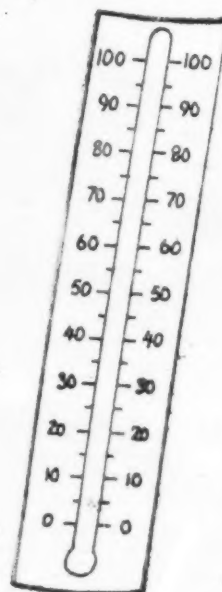
COLOR IN THE TEMPERATURE ON THE THERMOMETERS BELOW:



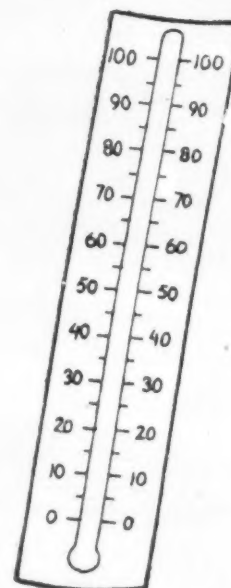
20° C



35° C



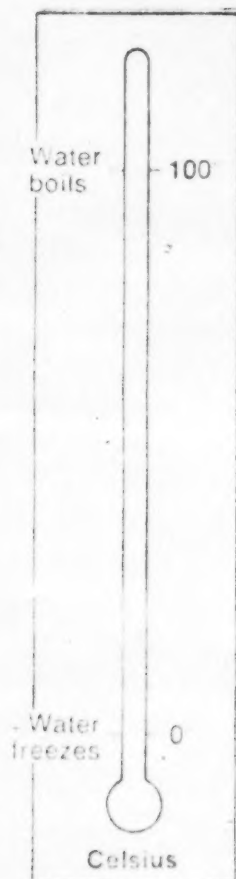
70° C



55° C

THE CELSIUS SCALE

IN THE METRIC SYSTEM THE UNIT FOR MEASURING TEMPERATURE IS THE DEGREE CELSIUS. ITS NAME COMES FROM THE SWEDISH ASTRONOMER, ANDERS CELSIUS. HIS SCIENCE WAS THAT OF THE SUN AND THE MOON, THE STARS AND THE OTHER PLANETS. AS A SCIENTIST HE OFTEN USED A THERMOMETER. BUT CELSIUS THOUGHT THE THERMOMETERS BEING USED WERE TOO COMPLICATED. SO IN 1742 HE INVENTED ONE HE THOUGHT WAS EASIER TO USE.



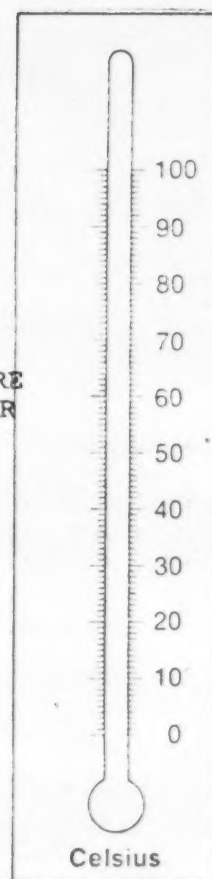
ON THE CELSIUS THERMOMETER, 0° ($^{\circ}$ MEANS DEGREES) IS THE FREEZING POINT OF WATER AND 100° IS THE BOILING POINT OF WATER. THERE ARE 100° BETWEEN FREEZING AND BOILING. LOOK AT THE THERMOMETER AT THE LEFT.

SOMETIMES THE CELSIUS SCALE IS CALLED THE CENTIGRADE SCALE. YOU HAVE LEARNED THAT THE PREFIX CENTI-MEANS HUNDREDTHS.

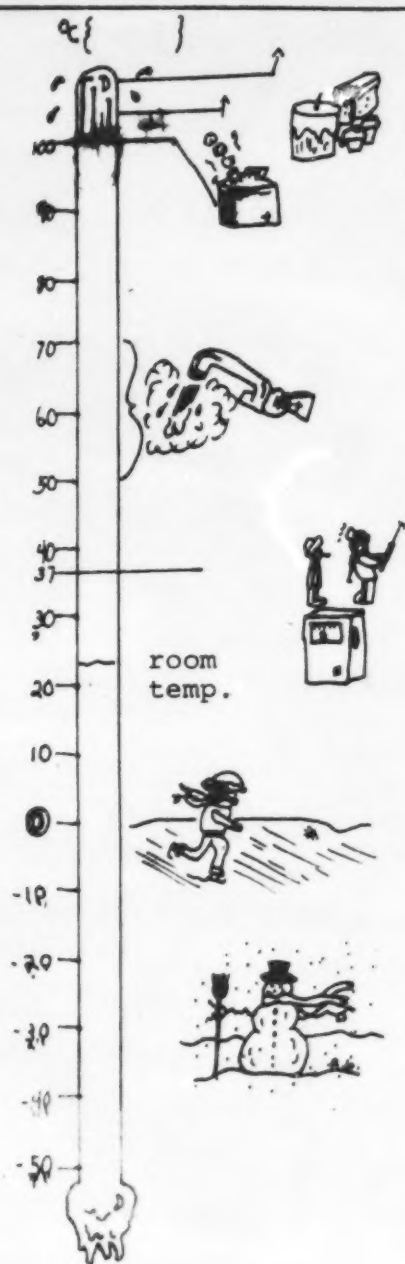
THERE ARE OTHER SCALES USED TO MEASURE TEMPERATURE. SO WHEN YOU RECORD A TEMPERATURE TAKEN ON A CELSIUS THERMOMETER, WRITE C AFTER IT.

WATER FREEZES AT 0°C .

WATER BOILS AT 100°C .



1. HOW MANY EQUAL DIVISIONS ARE THERE BETWEEN THE BOILING AND FREEZING POINTS OF WATER?
2. WHAT DO YOU THINK CENTIGRADE MEANS?



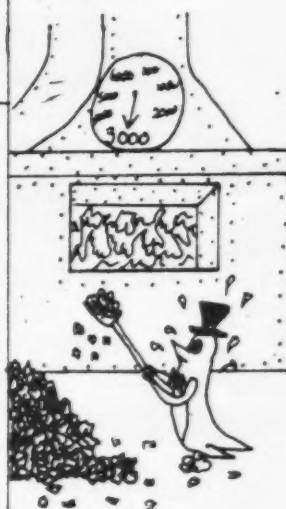
BODY TEMPERATURE

TEMPERATURE (°C)	BODY CONDITION
37	NORMAL
37.5	SLIGHT COLD
38	LOW-GRADE FEVER
39	FLU
40	QUITE SICK
40.5	ALARM
41	CONVULSION



INDUSTRIAL AND KITCHEN TEMPERATURES

TEMPERATURE (°C)	HEAT CONDITION
3000	MELTS IRON
1000	MELTS GOLD
250	FOR BROILING STEAK
215	FOR ROASTING BEEF
200	FOR BAKING POTATOES
175	FOR BAKING COOKIES
160	FOR BAKING FISH



1. WHAT READING WOULD BEST APPROXIMATE THE TEMPERATURE IN YOUR CLASSROOM _____
2. WHAT READING WOULD BEST APPROXIMATE THE TEMPERATURE OUTDOORS _____
3. COULD YOU MEASURE THE TEMPERATURE OF A FREEZER WITH THE THERMOMETER ON THE LEFT _____
4. COULD YOU MEASURE THE TEMPERATURE INSIDE A FURNACE WITH THE THERMOMETER ON THE LEFT. _____

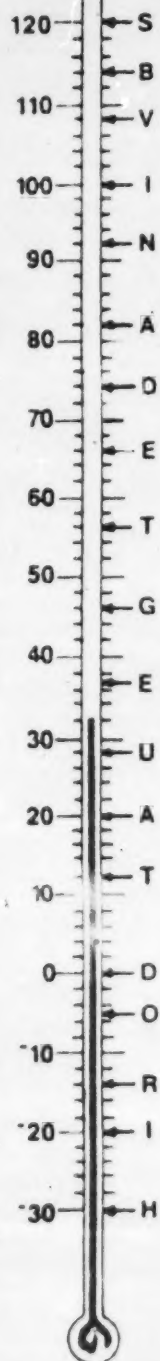
continued

5. WHAT RANGE OF TEMPERATURES WOULD DESCRIBE "HOT" _____?
6. WHAT RANGE OF TEMPERATURE WOULD DESCRIBE WARM _____?
7. WHAT RANGE OF TEMPERATURE WOULD DESCRIBE COLD _____?
8. WHAT RANGE OF TEMPERATURE WOULD DESCRIBE FREEZING _____?



"HOW DO YOU READ ME?"

Find each temperature below on the thermometer. Record the letter at that reading point on the appropriately numbered blank below. Good thermometer reading will break the code.



1. 56°C
2. 0°C
3. 28°C
4. 82°C
5. 114°C
6. -5°C
7. 100°C
8. 37°C
9. 74°C
10. 20°C
11. 66°C
12. -14°C
13. 12°C
14. 92°C
15. 108°C
16. 46°C
17. Freezing point of water
18. Boiling point of water
19. Normal body temperature
20. Coldest reading possible on this thermometer.

CODE:

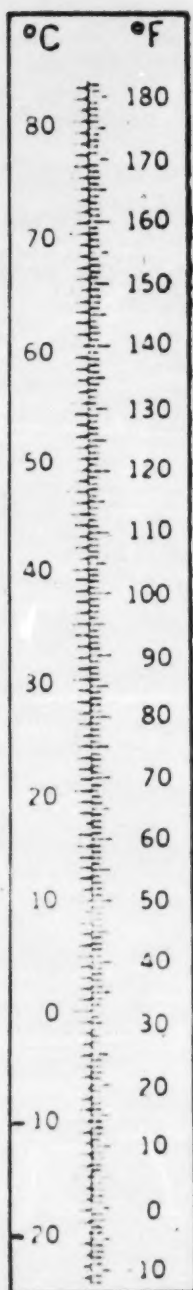
I wanted to be a weather forecaster,

5	3	1	7	2	18	9
14	6	13	20	10	15	11
4	17	19	16	12	11	8

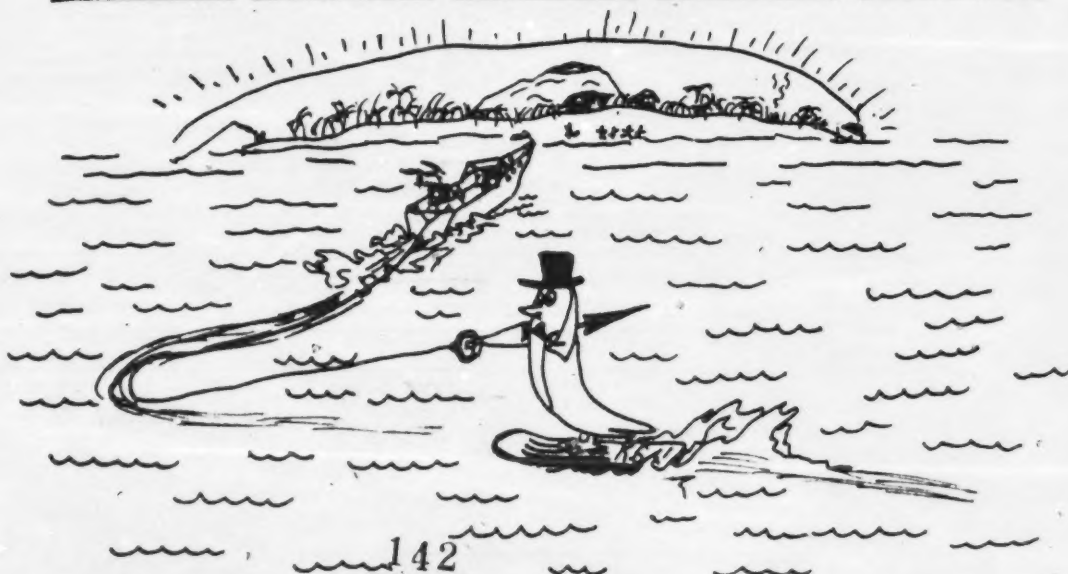
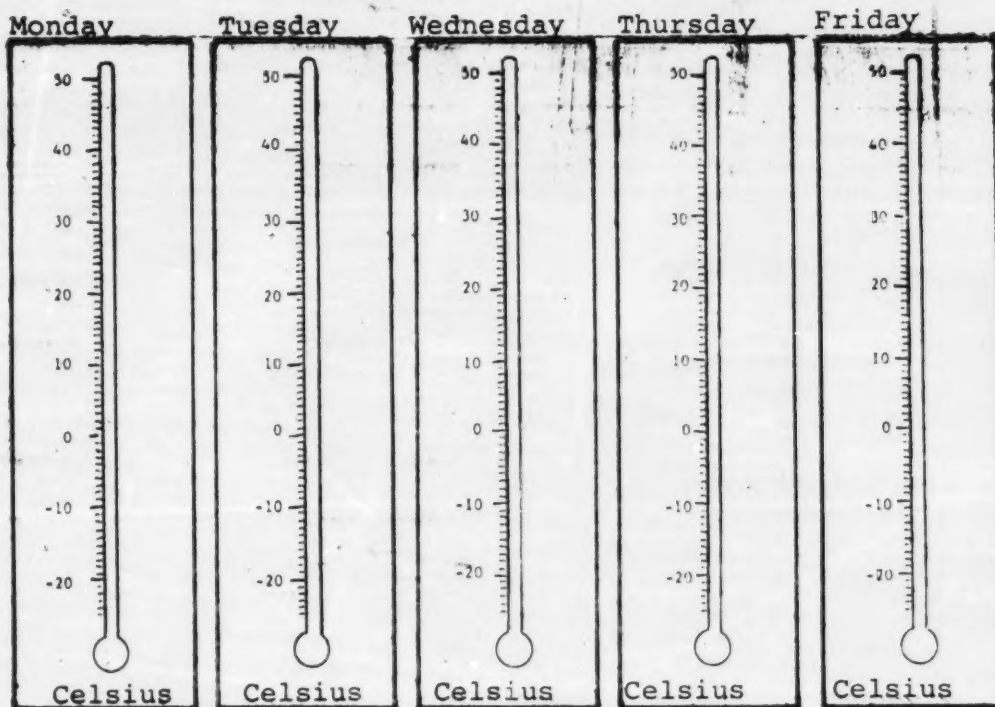
I.O. # T-4

RECORD AND IDENTIFY DAILY AND MONTHLY TEMPERATURE USING
CELSIUS THERMOMETER
(weekly)

RECORD THE TEMPERATURE ON THE CELSIUS THERMOMETER FOR A PERIOD OF
ONE WEEK.

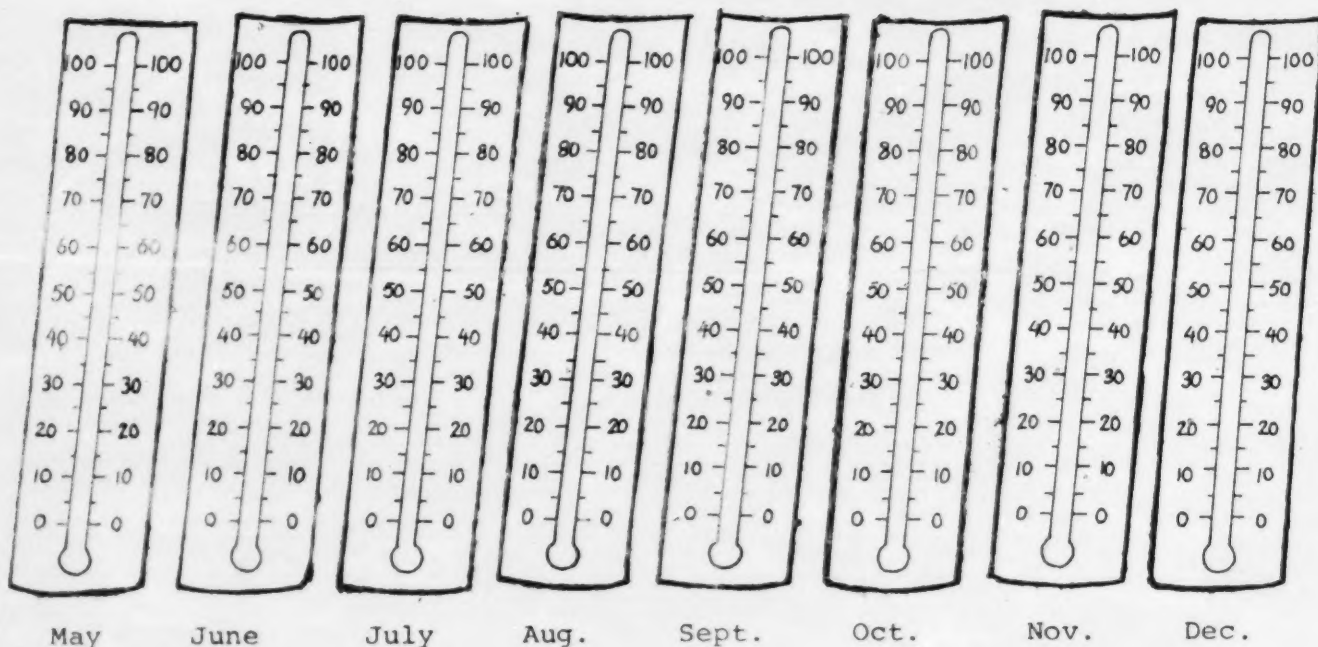
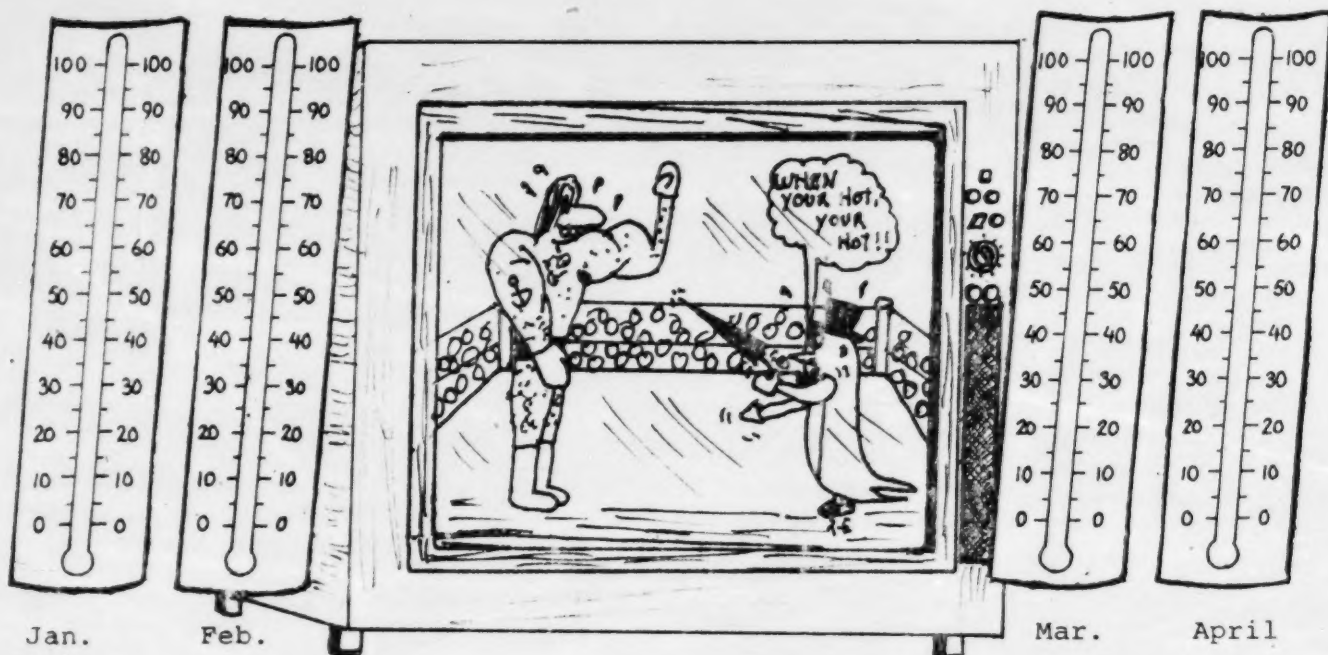


WEEK OF _____



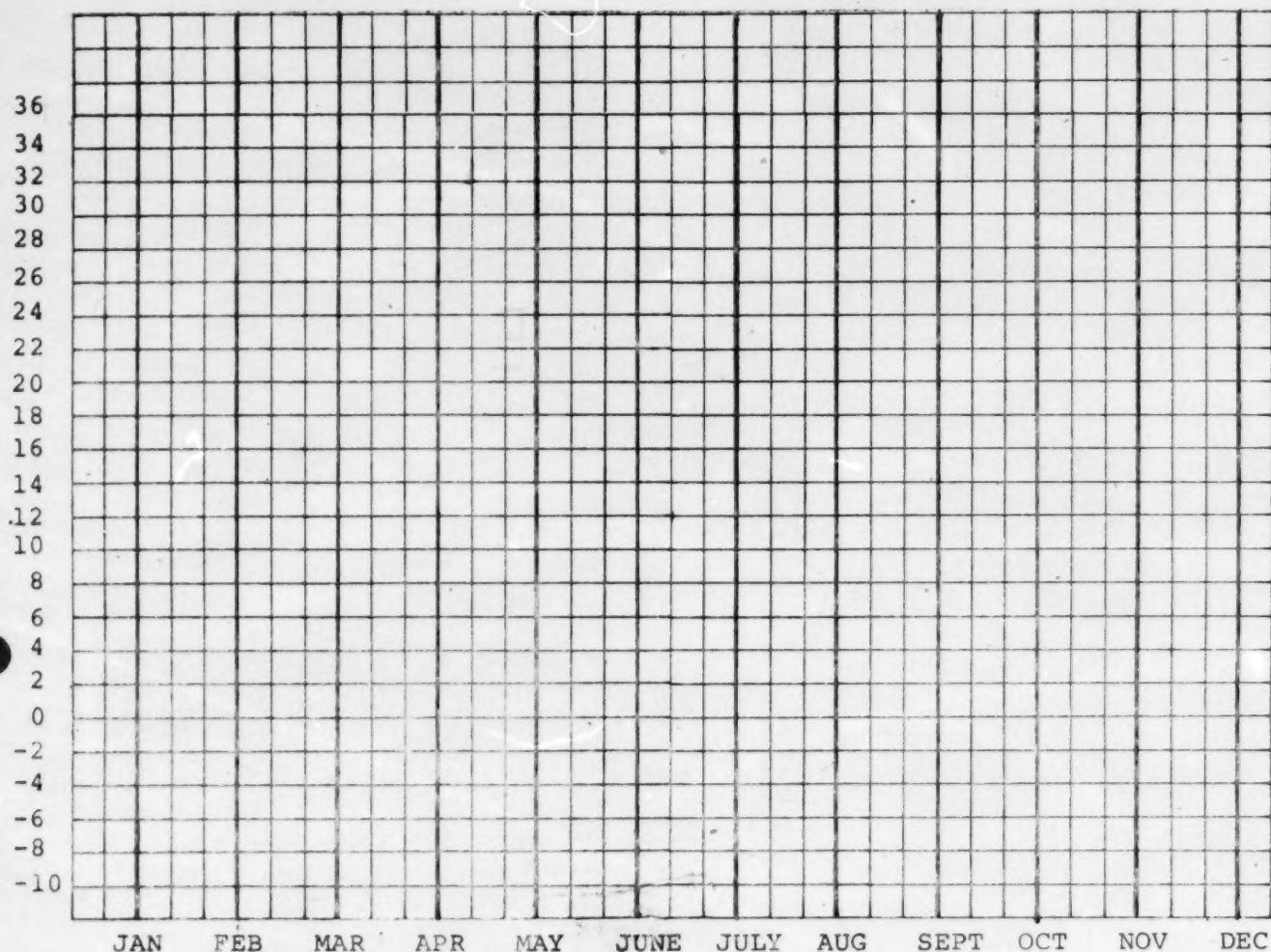
I.O. # T-4 RECORD AND IDENTIFY DAILY AND MONTHLY TEMPERATURE USING
CELSIUS THERMOMETER.
(monthly)

FOR EACH MONTH COLOR IN A TEMPERATURE ON THE THERMOMETER THAT WOULD BE
REASONABLE FOR OUTDOORS AT 12:00 NOON WHERE YOU LIVE. RECORD THESE
TEMPERATURES ON THE GRAPH ON THE FOLLOWING PAGE.

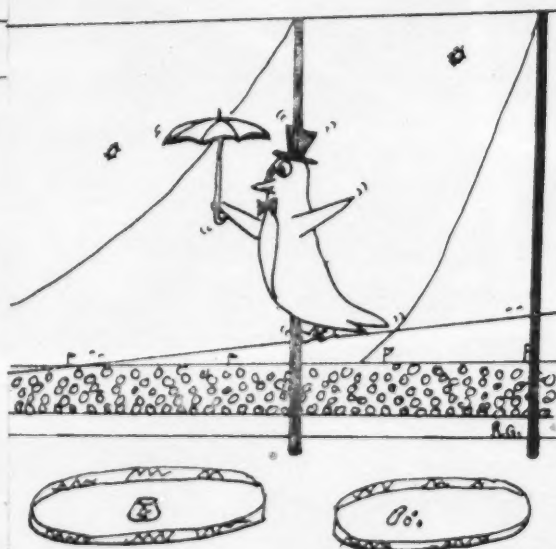


I.O. # T-4

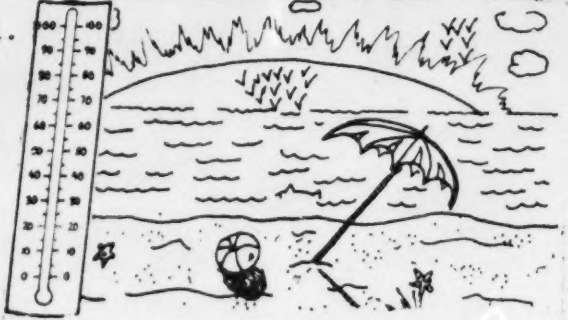
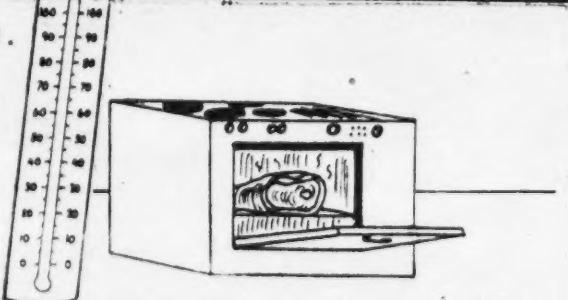
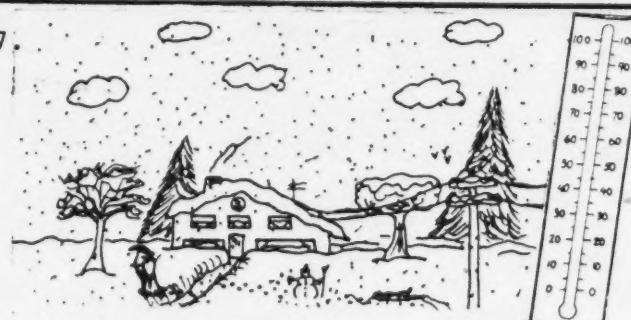
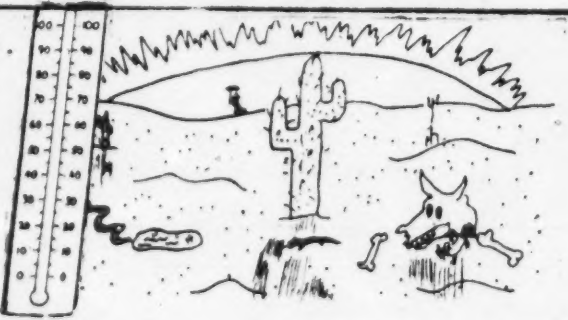
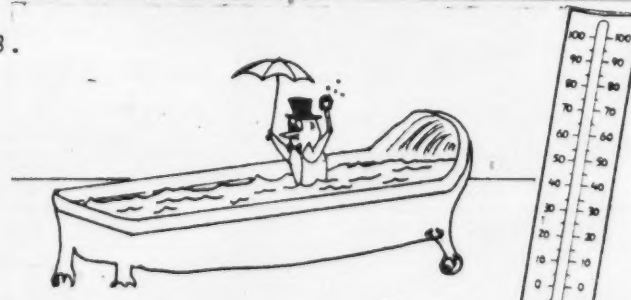
RECORD AND IDENTIFY DAILY AND MONTHLY TEMPERATURE USING
CELSIUS THERMOMETER.
(monthly)



1. WHICH MONTH HAD THE HIGHEST TEMPERATURE? _____
2. WHICH MONTH HAD THE LOWEST TEMPERATURE? _____
3. HOW MANY DEGREES CHANGE IN TEMPERATURE WAS
THERE FROM APRIL TO JUNE? _____



CIRCLE THE TEMPERATURE WHICH BEST DESCRIBES EACH SCENE. THEN COLOR IN THAT TEMPERATURE ON THE CELSIUS THERMOMETER.

1.  28° 68° 88°	5.  2° 12° 32°
2.  30° 33° 39°	6.  30° 75° 100°
3.  24° 40° 174°	7.  0° 32° 72°
4.  50° 70° 120°	8.  40° 70° 100°

9. 5° 10° 40°	13. 17° 5° 30°
10. 9° 14° 26°	14. 20° 50° 72°
11. 10° 15° 100°	15. 4° 10° 24°
12. 10° 50° 75°	16. -5° 5° 32°

CHOOSE THE MORE SENSIBLE TEMPERATURE.

- | | | |
|-------------------|-------|------|
| 1. HOT SOUP | 25°C | 58°C |
| 2. SPRING DAY | 20°C | 65°C |
| 3. BOILING WATER | 100°C | 50°C |
| 4. WINTER DAY | 45°C | -7°C |
| 5. DRINKING WATER | 10°C | 70°C |
| 6. FALL DAY | 13°C | 60°C |
| 7. ICE CREAM | 30°C | 4°C |
| 8. HOT FUDGE | 130°C | 40°C |
| 9. ICE CUBE | 0°C | 32°C |
| 10. RAIN WATER | 60°C | 18°C |
| 11. WARM MILK | 15°C | 55°C |
| 12. COLD PUDDING | 8°C | 40°C |

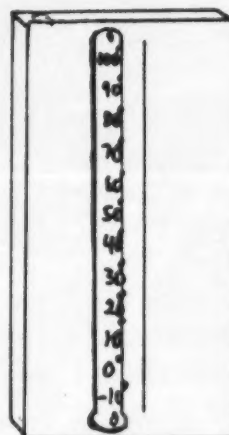
CIRCLE THE ANSWER THAT YOU THINK BEST COMPLETES EACH OF THE FOLLOWING:

- | | | | |
|---|------|-------|-------|
| 1. YOU ARE GOING ICE SKATING ON THE LAKE. THE TEMPERATURE OF THE ICE IS _____? | 0°C | 20°C | 50°C |
| 2. THE ROOM WAS COLD. JENNY NEEDED A SWEATER. THE TEMPERATURE OF THE ROOM WAS _____? | 15°C | 22°C | 30°C |
| 3. "HEAT THE WATER TO ITS BOILING POINT. THEN ADD THE SOUP MIXTURE." THE TEMPERATURE OF THE BOILING WATER WILL BE _____? | 60°C | 100°C | 140°C |
| 4. GLORIA IS NOT FEELING WELL. SHE HAS A FEVER. GLORIA'S BODY TEMPERATURE COULD BE _____? | 32°C | 37°C | 39°C |
| 5. IT WAS HOT IN THE OFFICE BEFORE MR. COLLINS TURNED ON THE FAN. THE TEMPERATURE OF THE OFFICE COULD HAVE BEEN _____? | 10°C | 22°C | 36°C |
| 6. SNOW WAS FALLING. THE TEMPERATURE MUST HAVE BEEN ABOUT _____? | 0°C | 22°C | 37°C |
| 7. SAM RAN ACROSS THE BEACH TO THE OCEAN. THE SAND BURNED HIS FEET. THE TEMPERATURE OF THE SAND WAS PROBABLY ABOUT _____? | 20°C | 40°C | 100°C |

SUGGEST A FITTING DESCRIPTION FOR EACH GIVEN TEMPERATURE . YOUR CHOICES ARE FOUND TO THE RIGHT OF EACH EXERCISE:

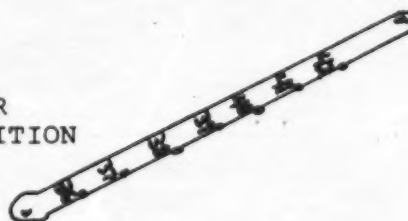
I. ENVIRONMENT TEMPERATURE

- | | |
|----------------|--|
| a) 40°C _____ | a) FREEZING POINT |
| b) -20°C _____ | b) AS FRIGID AS IT EVER GETS IN THE U.S. |
| c) 10°C _____ | c) ROOM TEMPERATURE |
| d) 30°C _____ | d) BOILING POINT |
| e) -40°C _____ | e) A THIRSTY DAY IN N.Y. IN THE SUMMER |
| f) 0°C _____ | f) A VERY COLD DAY IN THE WINTER |
| g) 100°C _____ | g) A FIERY DAY IN SUMMER IN ARIZONA |
| h) 20°C _____ | h) A DAY IN THE SPRING OR AUTUMN |



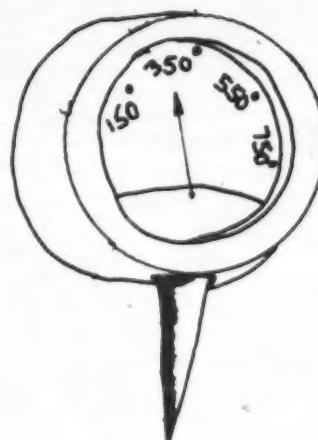
II. BODY TEMPERATURES

- | | |
|-----------------|--------------------------|
| a) 40°C _____ | a) FLU |
| b) 37°C _____ | b) CONVULSION |
| c) 39°C _____ | c) A LOW-GRADE FEVER |
| d) 37.5°C _____ | d) AN ALARMING CONDITION |
| e) 41°C _____ | e) NORMAL |
| f) 40.5°C _____ | f) A SLIGHT COLD |
| g) 38°C _____ | g) QUITE SICK |

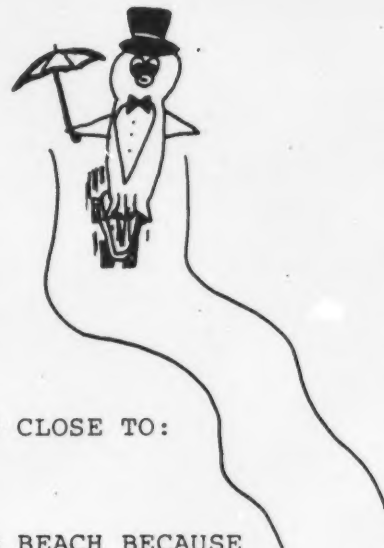


III. INDUSTRIAL AND KITCHEN TEMPERATURES

- | | |
|-----------------|------------------------|
| a) 100°C _____ | a) FOR BAKING CAKE |
| b) 1000°C _____ | b) MELTS IRON |
| c) 200°C _____ | c) FOR BROILING STEAK |
| d) 125°C _____ | d) FOR WARMING BREAD |
| e) 250°C _____ | e) FOR BAKING POTATOES |
| f) 3000°C _____ | f) MELTS GOLD |
| g) 150°C _____ | g) BOILS WATER |

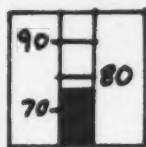


1. THE CELSIUS SCALE HONORS THE SWEDISH SCIENTIST BY THAT NAME WHO DEvised IT IN 1742. THE CELSIUS SCALE WAS KNOWN AS THE :
A) KELVIN B) FAHRENHEIT
C) MARVIN D) CENTIGRADE
2. GEORGE HAD BEEN ILL: HIS THROAT WAS SORE AND HE HAD A FEVER. HIS BODY TEMPERATURE WAS:
A) 99°C B) 38°C C) 22°C D) 0°C
3. IRENE NEEDED TO WEAR A SCARF AND GLOVES TO THE FOOTBALL GAME AS WELL AS A HEAVY COAT. THE TEMPERATURE OUTSIDE OF HER HOUSE THAT WINTER DAY WAS CLOSE TO:
A) 5°C B) 38°C C) 100°C D) 85°C
4. IT WAS HOT! IT WAS A PERFECT DAY FOR SWIMMING AT THE BEACH BECAUSE THE TEMPERATURE WAS CLOSE TO:
A) 0°C B) 30°C C) 75°C D) 95°C
5. IN THE CELSIUS SCALE THERE ARE (A) 32 B) 98 C) 212 D) 100) EQUAL DIVISIONS BETWEEN THE BOILING POINT AND FREEZING POINT OF WATER.
6. ICECREAM SHOULD BE KEPT IN THE FREEZER. THE TEMPERATURE OF THE FREEZER COMPARTMENT OF A REFRIGERATOR IS ABOUT:
A) 32°C B) 0°C C) 15°C D) 40°C
7. AN AVERAGE TEMPERATURE FOR THE MONTH OF JULY WOULD BE:
A) 28°C B) 50°C C) 80°C D) NONE OF THESE
8. A CUP OF HOT CHOCOLATE IS JUST RIGHT FOR DRINKING. ITS TEMPERATURE IS ABOUT:
A) 100°C B) 70°C C) 0°C D) NONE OF THESE



9. THE AVERAGE SUMMER TEMPERATURE FOR THE GREAT LAKES IS 18°C , AND 29°C FOR THE GULF OF MEXICO. WHAT IS THE DIFFERENCE IN AVERAGE TEMPERATURE FOR THE TWO BODIES OF WATER?
A) 47°C B) 11°C C) 50°C D) NONE OF THESE

1. What is the temperature below?



- a) 70° b) 80° c) 75° d) none of these

2. The boiling point of water is:

- a) 0°C b) 212°C c) 100°C d) 50°C

3. Normal body temperature is approximately:

- a) 37° b) 32°C c) 98.6°C d) none of these

4. What would the best temperature be for the scene below?



- a) 40°C b) 70°C c) 120°C d) 100°C

5. Frozen vegetables should be kept in a freezer. The temperature of a freezer is around?

- a) 0°C b) 15°C c) 40°C d) none of these

6. An average temperature for the month of July would be:

- a) 28°C b) 50°C c) 80°C d) 10°C

7. A cup of hot chocolate is just right for drinking. Its temperature is about:

- a) 100°C b) 70°C c) 0°C d) none of these

- 8) The average summer temperature for the Great Lakes is 18° Celsius, and 29° Celsius for the Gulf of Mexico. What is the difference in average temperature for the two bodies of water?
- a) 47°C b) 11°C c) 50°C d) none of these
- 9) One winter day when the temperature was 22°C in Hawaii, it was -22°C in Alaska. What was their temperature difference?
- a) 22°C b) 44°C c) 60°C d) none of these
- 10) Our classroom was cold. Many students asked to put on sweaters. The temperature of the room was:
- a) 15°C b) 22°C c) 30°C d) none of these

GLOSSARY

area	the amount or size of a surface measured in square units
basic unit	a unit of measure from which other units are formed
capacity	the measure of contents that a container can hold
centi-	a prefix meaning "hundredth"
centigram	a unit of weight or mass equal to .01 gram
centiliter	a unit of capacity equal to .01 liter
centimeter	a unit of length equal to 1 of 100 congruent parts of a meter
congruent	having the same size and shape
cubic centimeter	a unit of volume equivalent to the volume of a cube that is 1 cm on each side
deci	a prefix meaning "tenth"
decigram	a unit of weight or mass equal to .1 gram
deciliter	a unit of capacity equal to .1 liter
decimeter	a unit of length equivalent to 1 of 10 congruent parts of a meter
degree	a unit of measure of temperature
degree Celsius	a unit of measure of temperature on the Celsius scale
gram	the basic unit of weight or mass; the weight or mass of 1 cm ³ of water
hecto	a prefix meaning "100"
kilo-	a prefix meaning "thousand"
kilogram	a unit of weight or mass equal to 1,000 grams; the weight or mass of 1 dm ³ of water
kiloliter	a unit of capacity equal to 1000 liters; the capacity of a cube that is 1 meter on each edge

kilometer	a unit of weight equal to 1000 meters
length	how long something is
liter	the basic unit of capacity equal to the capacity of a cube that measures 10 cm on each side
mass	the measure of the amount of matter something is made of
meter	the base unit of length
Metric System	a decimal system of measurement with the meter as the primary unit
milli-	a prefix meaning "thousandth"
milligram	a unit of weight or mass equal to .001 gram
milliliter	a unit of capacity equal to .001 liter; the capacity of a cube that is 1 centimeter on each side
millimeter	a unit of length equal to 1 of 1000 congruent parts of a meter
perimeter	the sum of the lengths of the sides of a polygon
speed	rate of motion; number of kilometers per hour
square centimeter	a unit of area equivalent to the area of a square region that is 1 centimeter on each side
square decimeter	a unit of area equivalent to the area of a square region that is 1 decimeter on each side
square meter	a unit of area equivalent to the area of a square region that is 1 meter on each side
square millimeter	a unit of area equivalent to the area of a square region that is 1 millimeter on each side
temperature	a measure of how hot or cold something is
thermometer	an instrument used to measure temperature in degrees
ton (tonne)	a unit of weight or mass equal to 1000 kg
volume	the amount of space an object occupies, usually measured in cubic centimeters.
weight	a measure of the force of gravitation; how heavy something is